



# MISSOURI BOTANICAL GARDEN

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## GEORGE ENGELMANN BOTANICAL NOTEBOOKS

*Pagination Note:*  
*Since many of the items lack a specific page number, the page number displayed online refers to the sequentially created number each item was given upon cataloging the materials.*

"A. amabilis"

Sept 5<sup>th</sup> 1870

Big Toes, Bolander

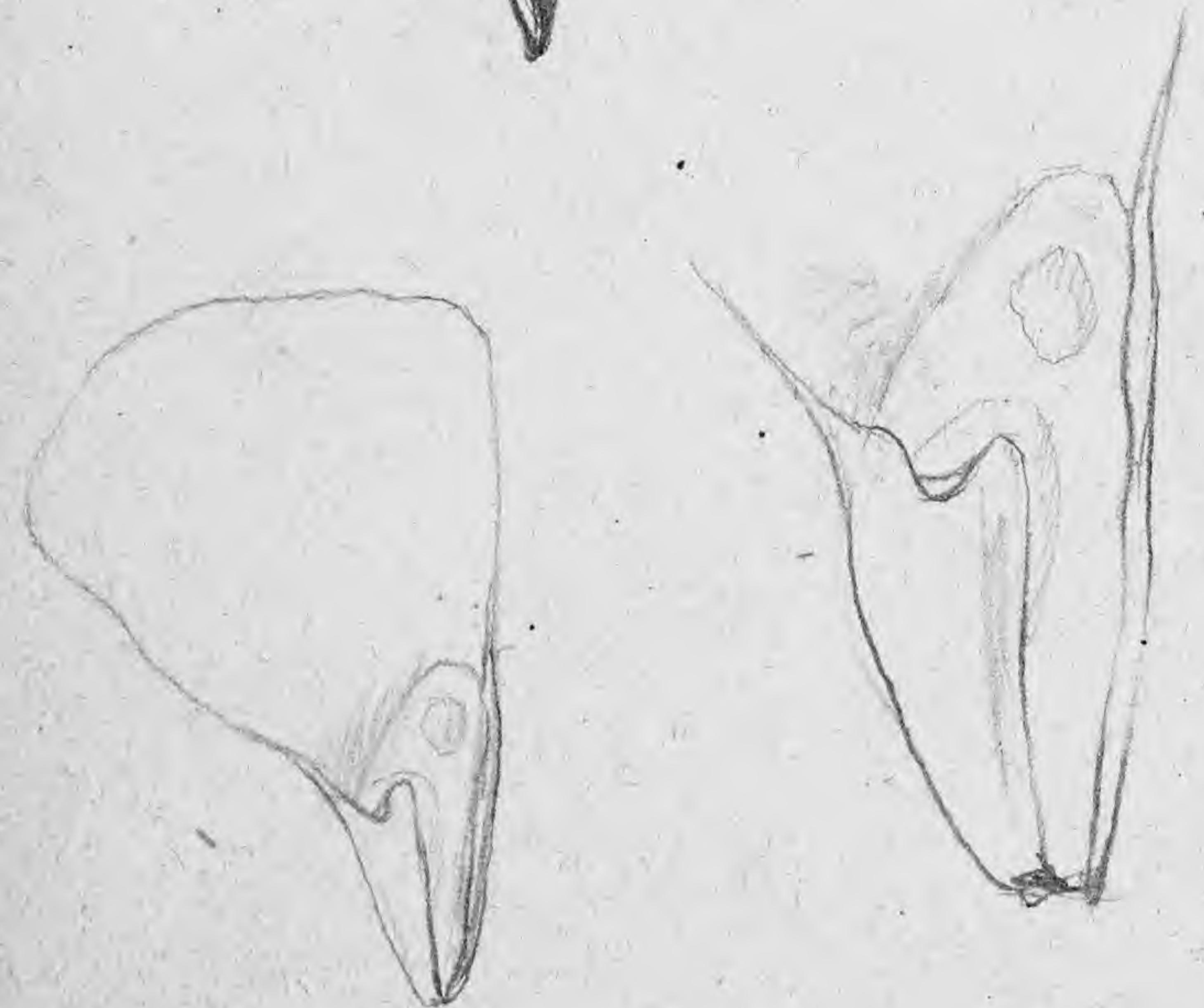
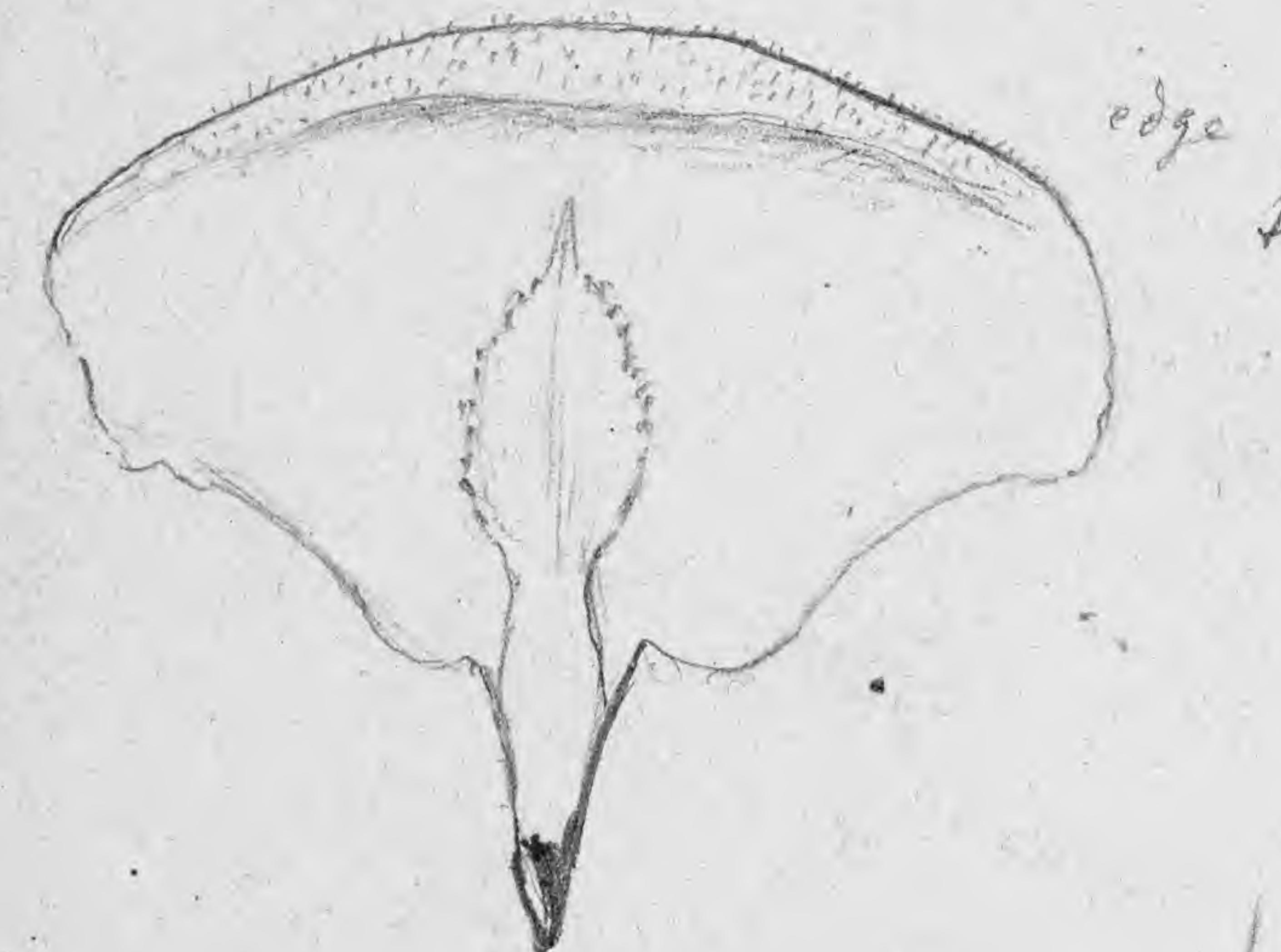
A. magnifica, Murray 1863 !

edge woolly, very narrowly  
turned up

scales without pedicel

width to height = 42 : 25

3 $\frac{1}{3}$  : 2



x 2

seed 14-15 mm long 6 mm wide  
 $2\frac{1}{2}$  times as long as wide  
exterior valve of wing with  
a prominent tooth, covering not  
quite  $\frac{2}{3}$  of (seed length of)



0 1 2 3 4 5 6 7 8 9 10  
cm

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GARDEN

12647



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0 1 2 3 4 5 6 7 8 9 10

cm

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scale 36: 21  
=  $3\frac{1}{2}$  2

"*Abies amabilis*"

April 22<sup>2</sup> 1871

Silver mountain trail Sierras of California

H.W. Brewer

Cone 5 inches by  $2\frac{3}{4}$  diam.



Cones always 6 - 8 inches  
long and half as wide  
purple, until ripe  
Lemon, April 1871



0

1

2

3

4

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6

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8

9

10

cm

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Leitch & Cotties

DRUGGISTS

South West Corner Fifth and Market Streets

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0 1 2 3 4 5 6 7 8 9 10

cm

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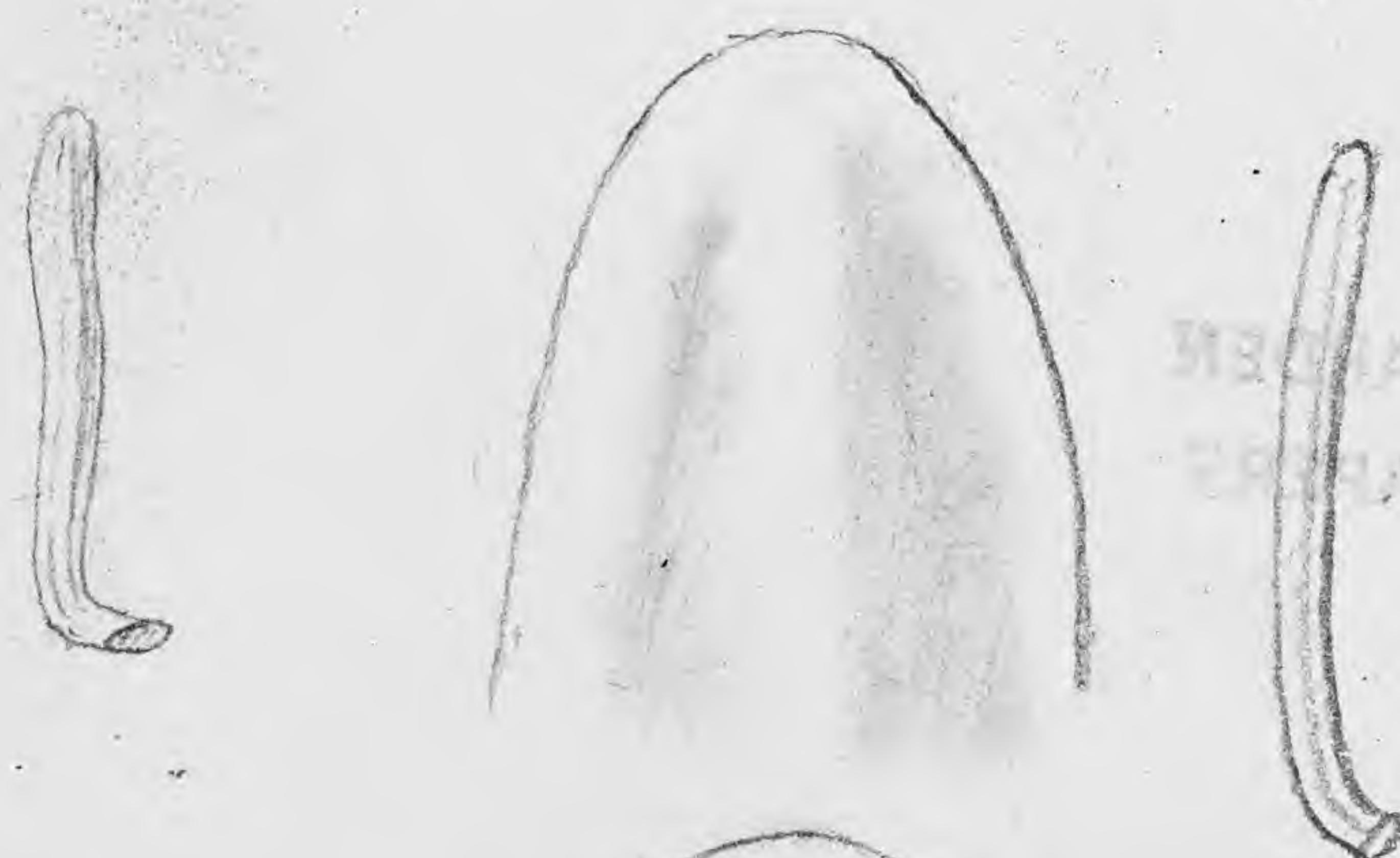
MISSOURI  
BOTANICAL  
GARDEN

"A. amabilis"

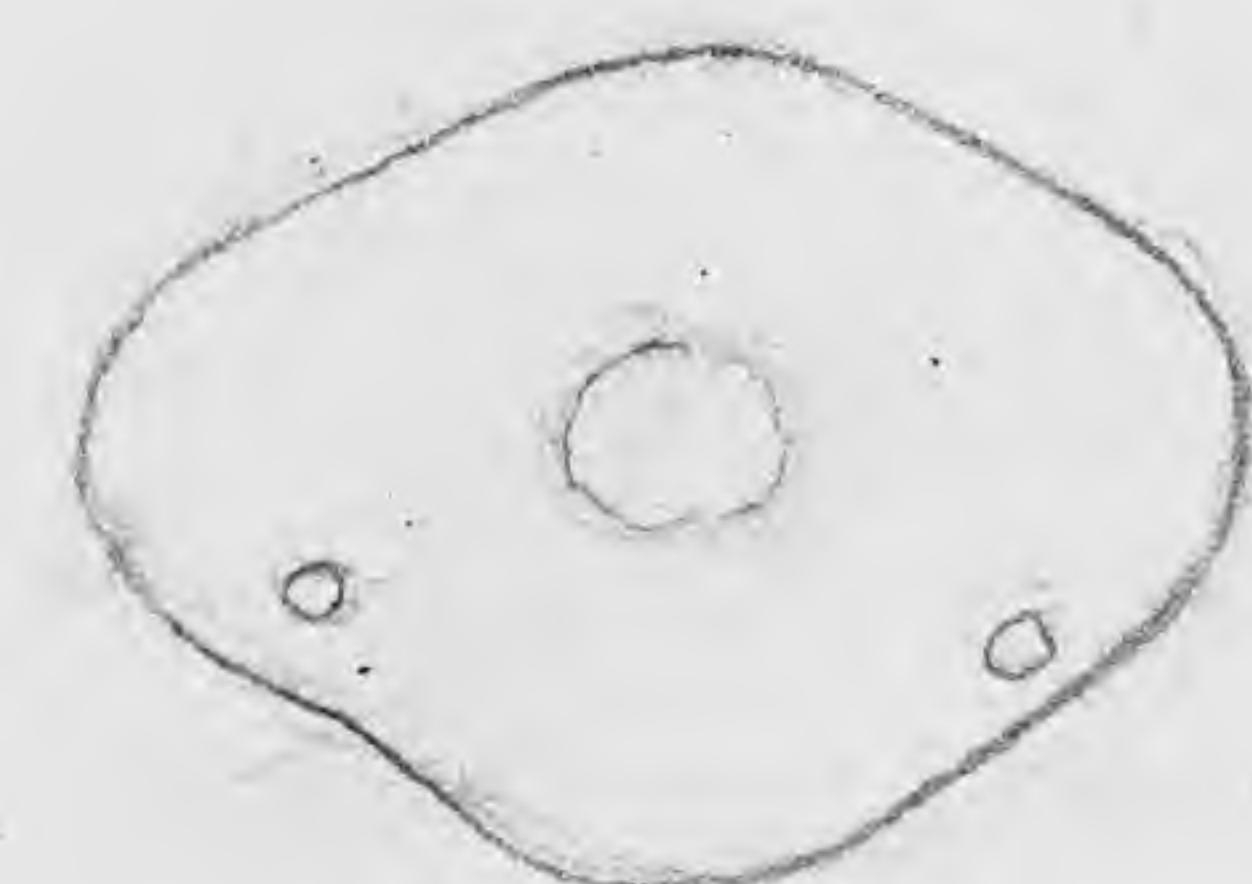
April 9 1872

male flowering plant, Big Trees, Bolands

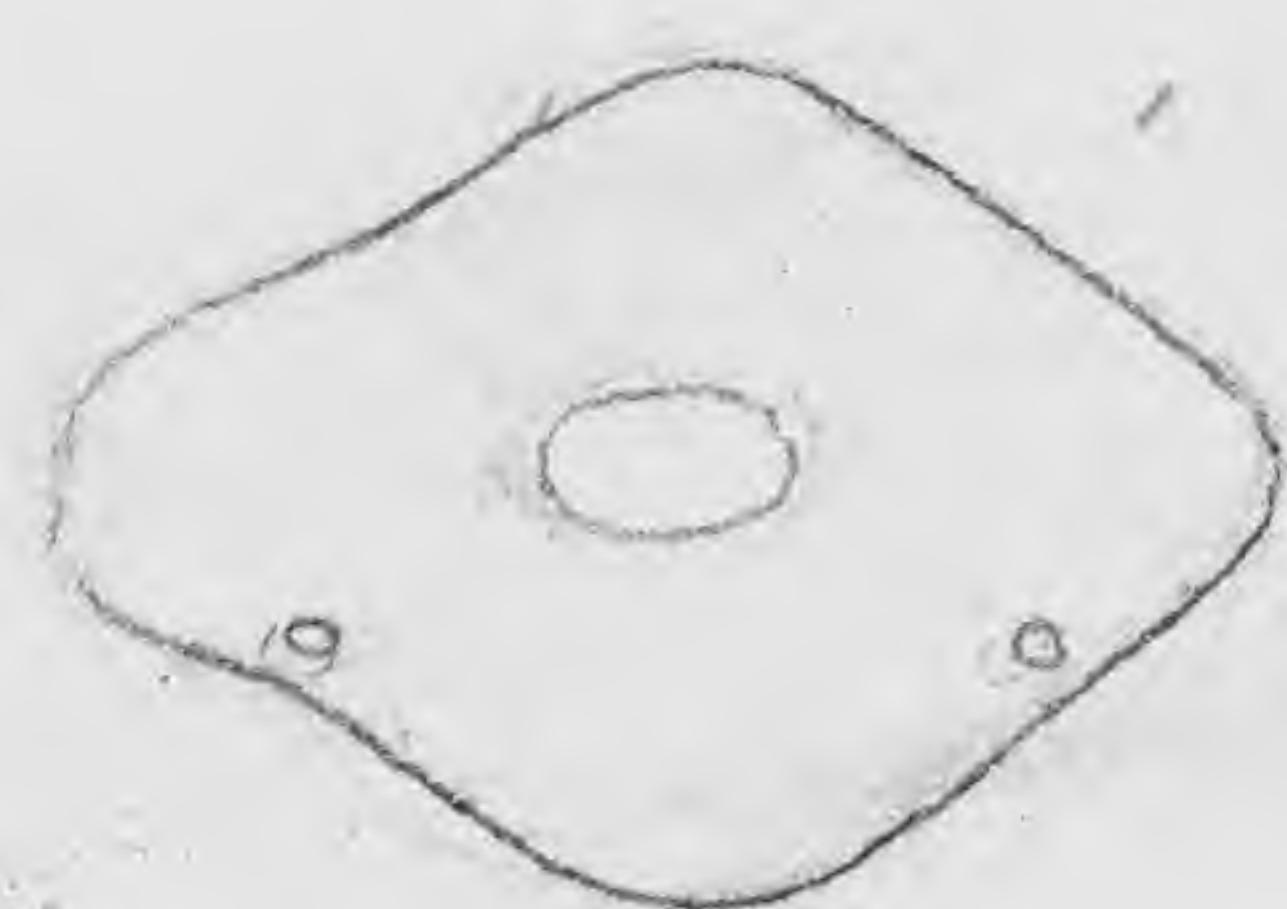
$\times 10$



section  
near tip



at middle



near base



0 1 2 3 4 5 6 7 8 9 10

cm

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0 1 2 3 4 5 6 7 8 9 10

cm

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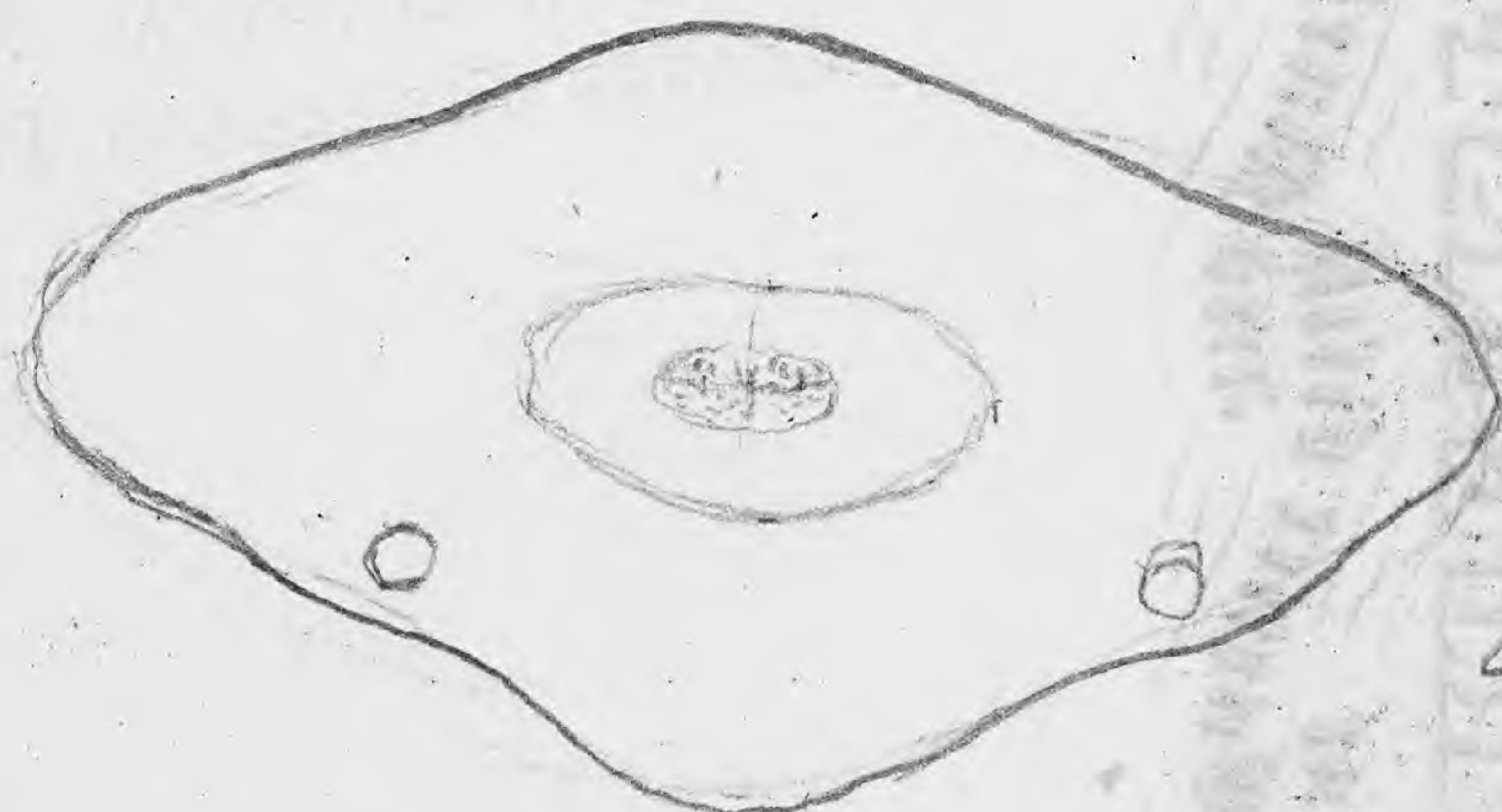
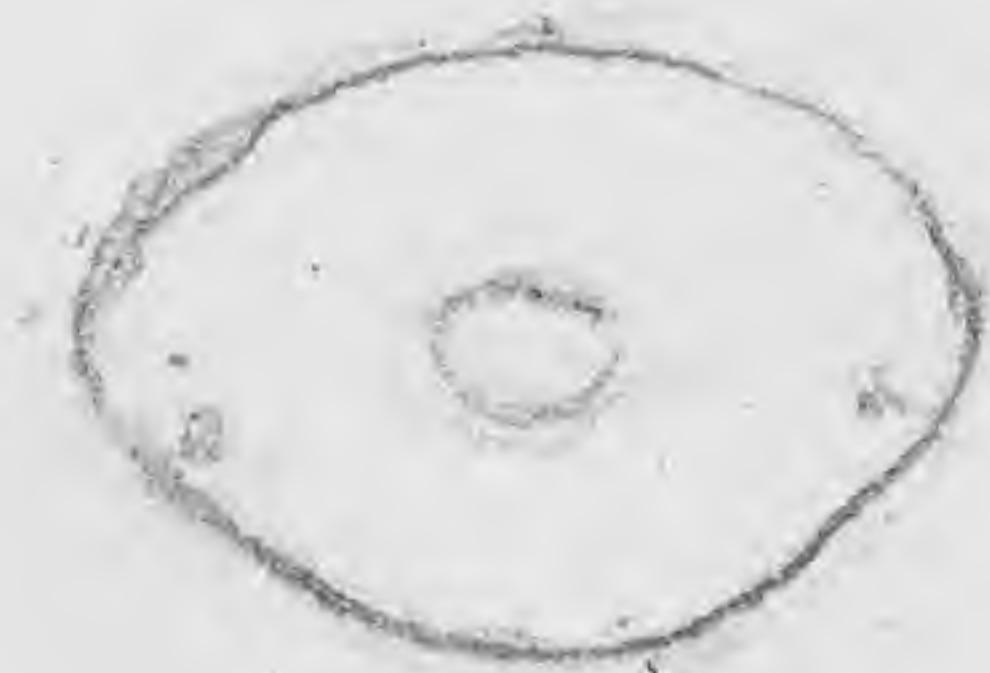
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"*A. nobilis*"

April 13 1872

California, Lobb, in Herb Kew

"tree 150 - 200 feet high"



x30

Orl 1975

stomata both sides



0 1 2 3 4 5 6 7 8 9 10

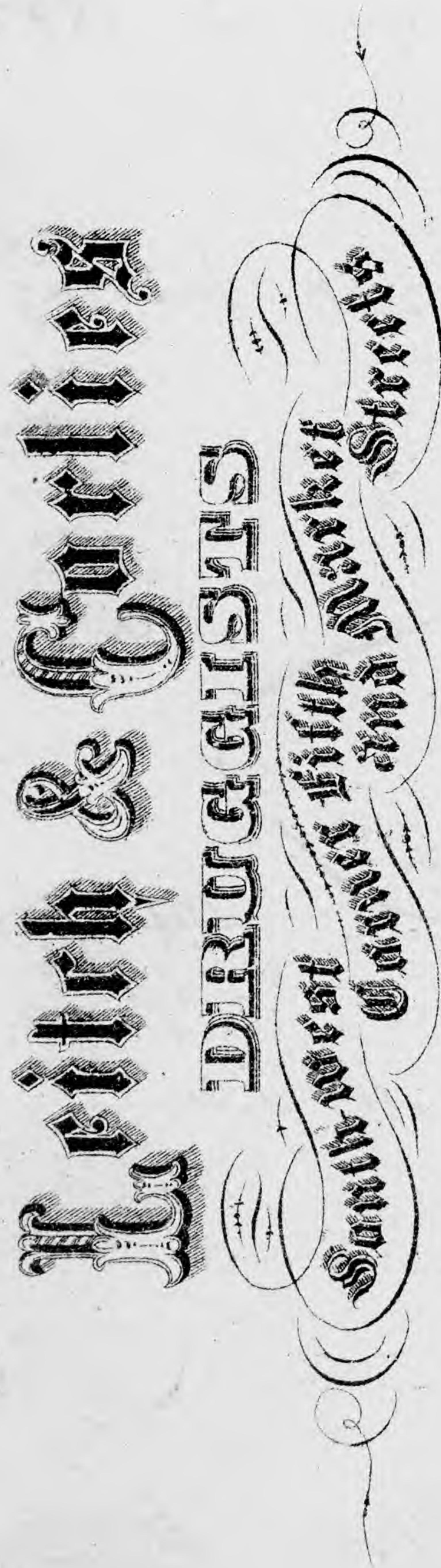
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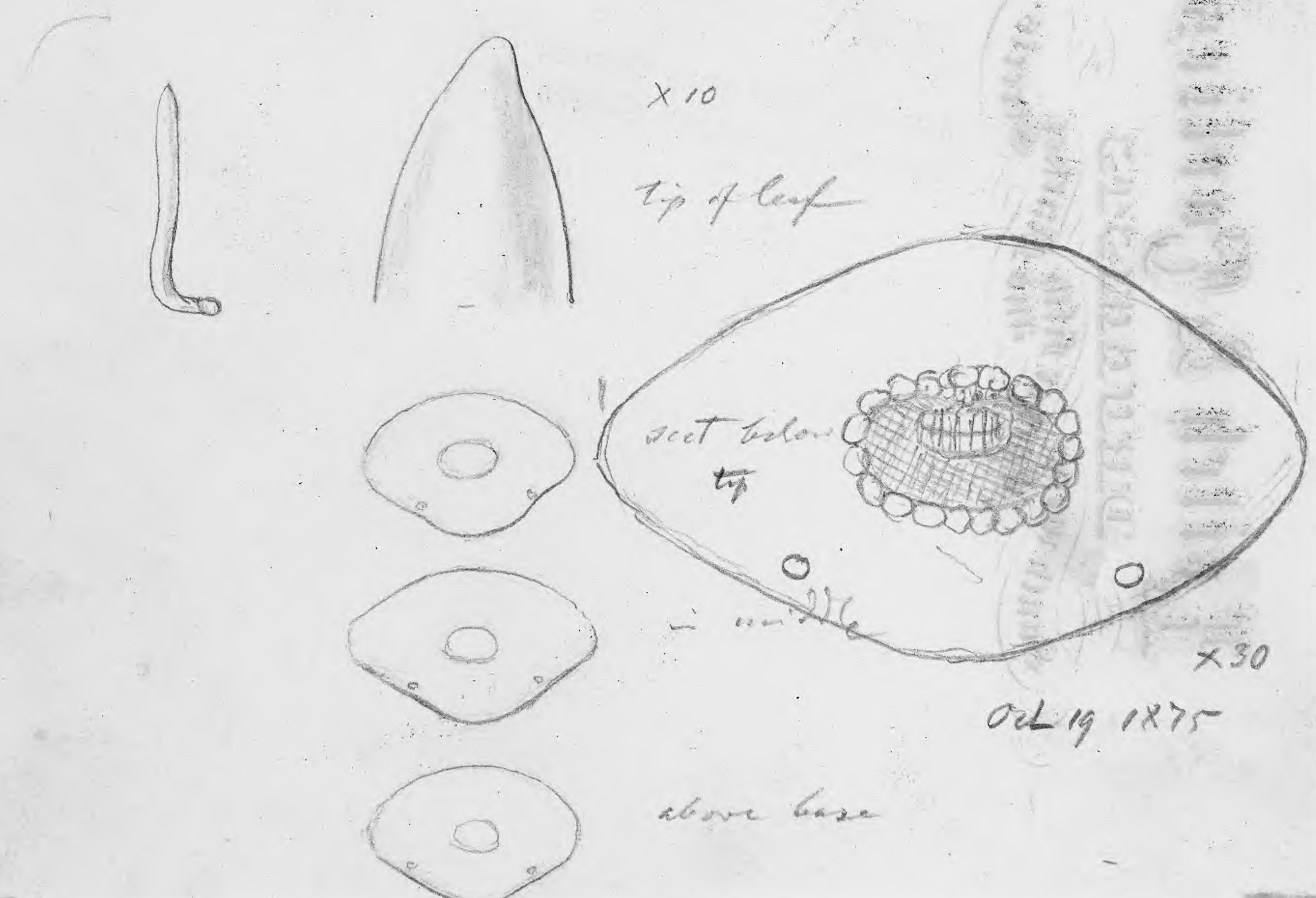


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"Abia, nobilis"

April 13 1872

California, Lowe - Herb - Keck



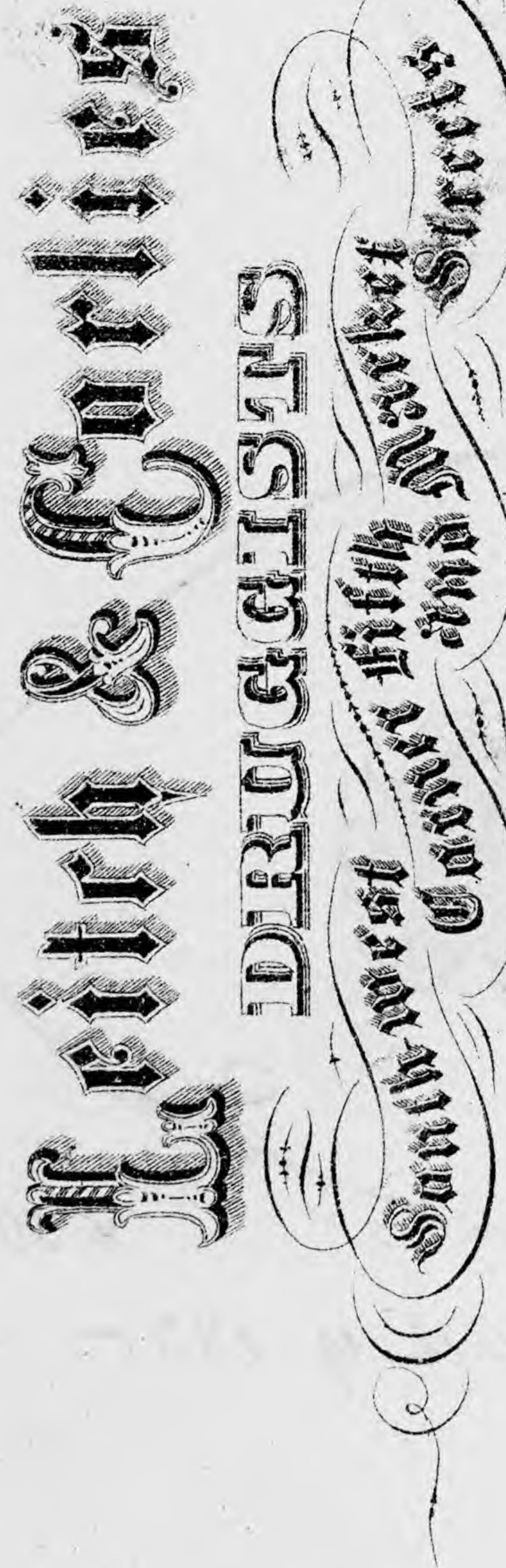
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cm

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cm

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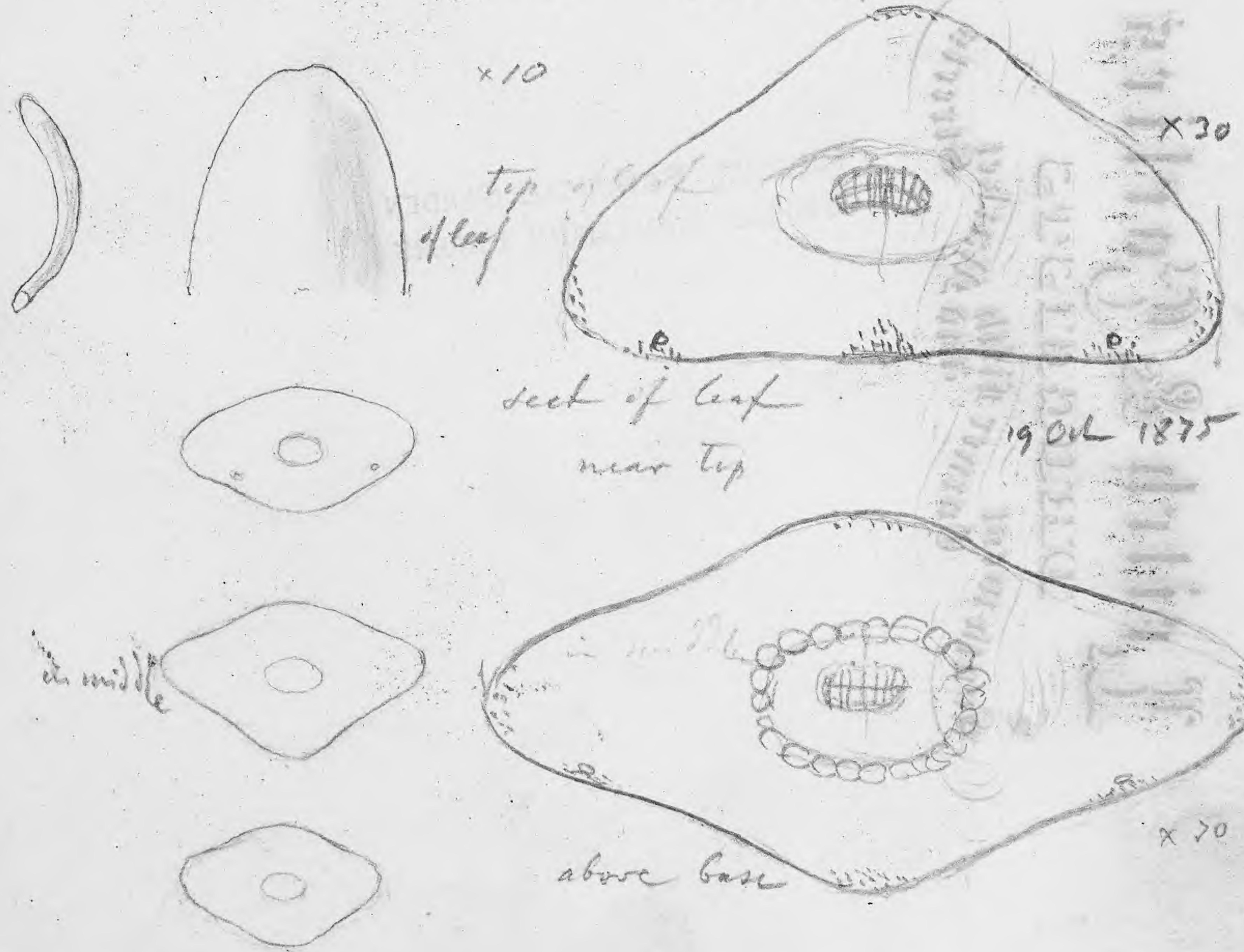


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*Abies*

April 13 1872

Fremont leg. N. 32 Dec. 1845



0 1 2 3 4 5 6 7 8 9 10  
cm

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# MISSOURI BOTANICAL GARDEN

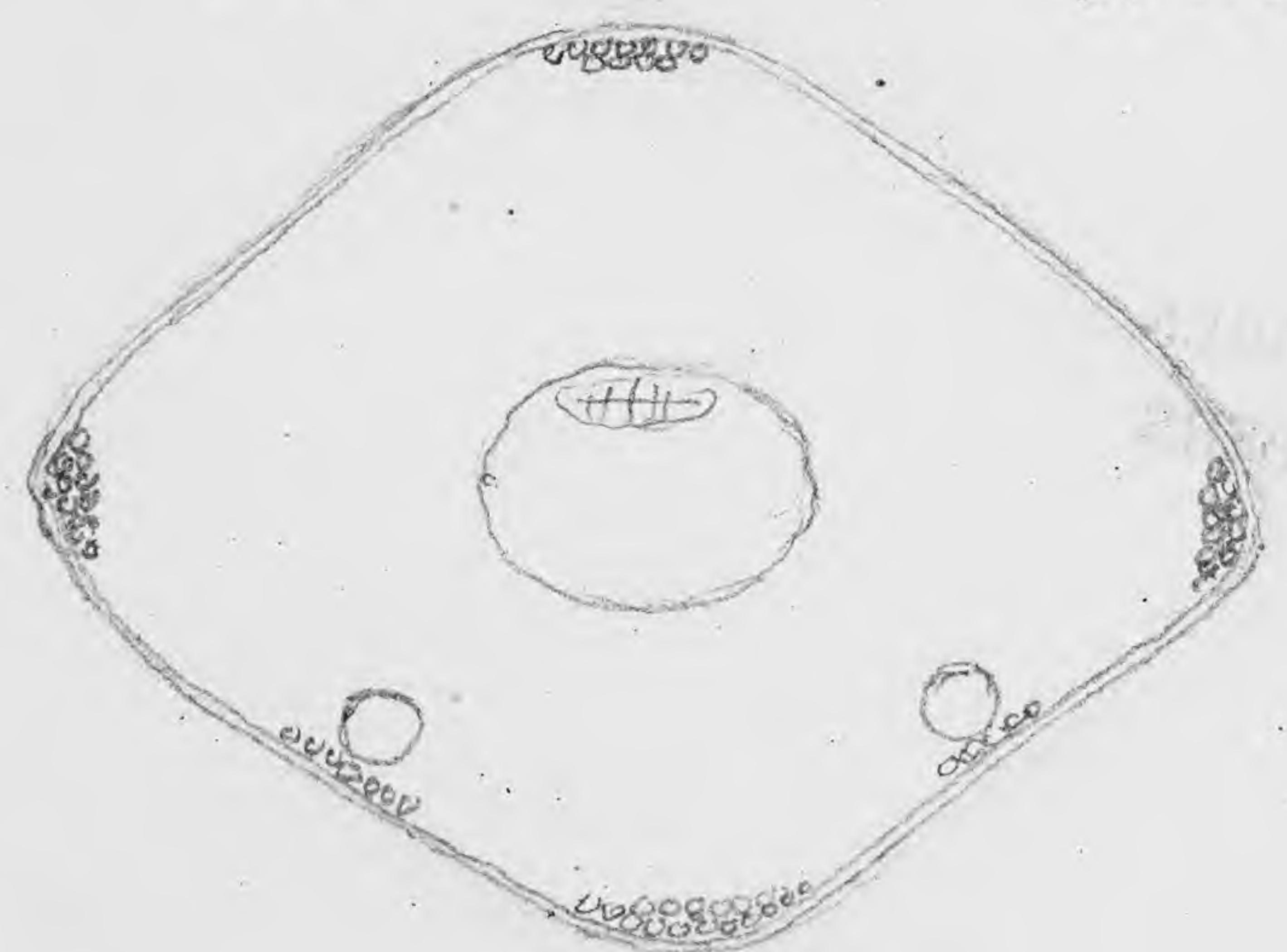
"Abies nobilis"

March 30 1881

x 30

Herb. Acad. Philad. 1879

leaf next to the cone



J



0 1 2 3 4 5 6 7 8 9 10

cm

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cm

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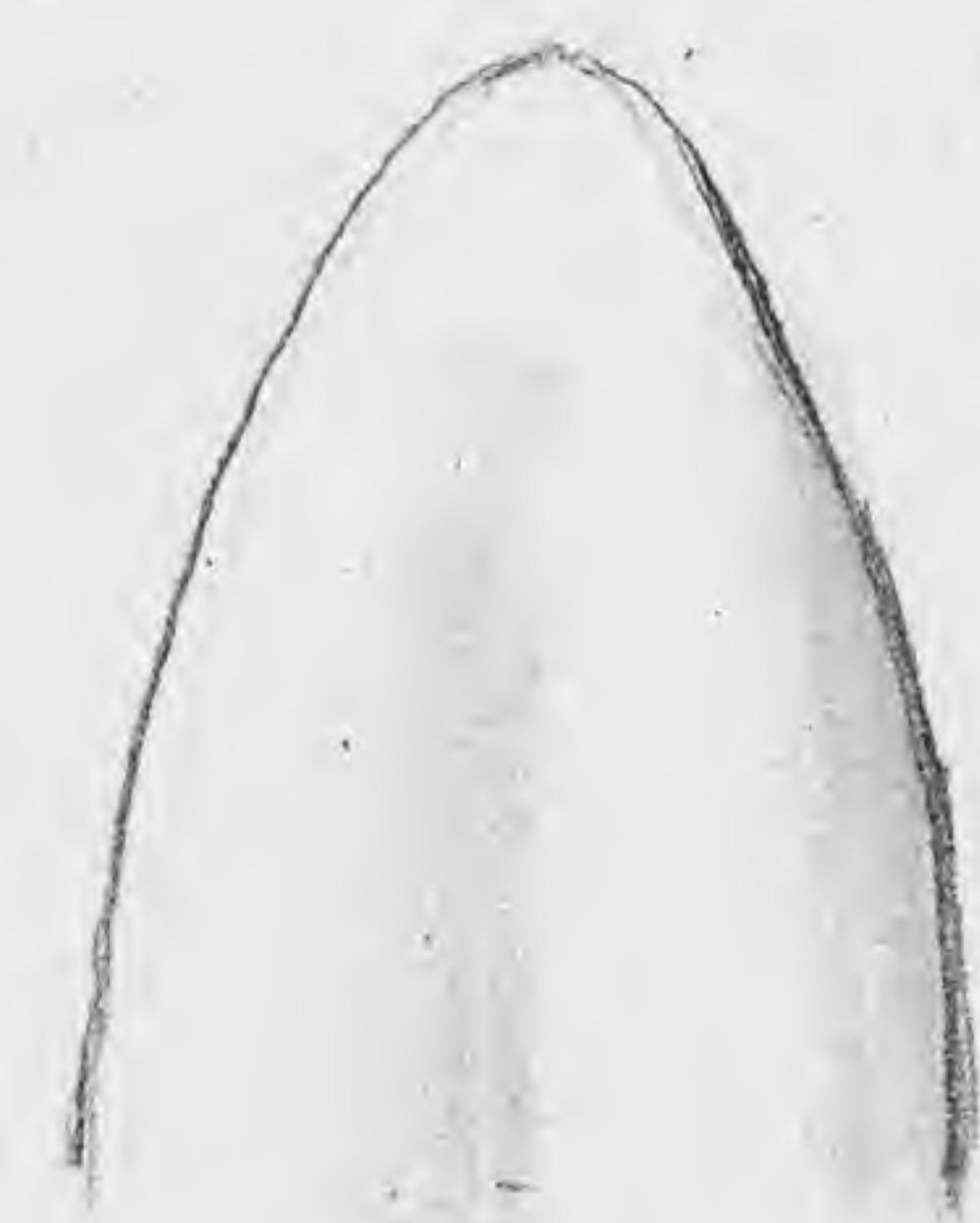
"*Abies robusta s. magnifica*"  
Hod. Bob. Edinburgh 1869

April 8 1872

a young tree, 5 feet high  
from California seed



x10



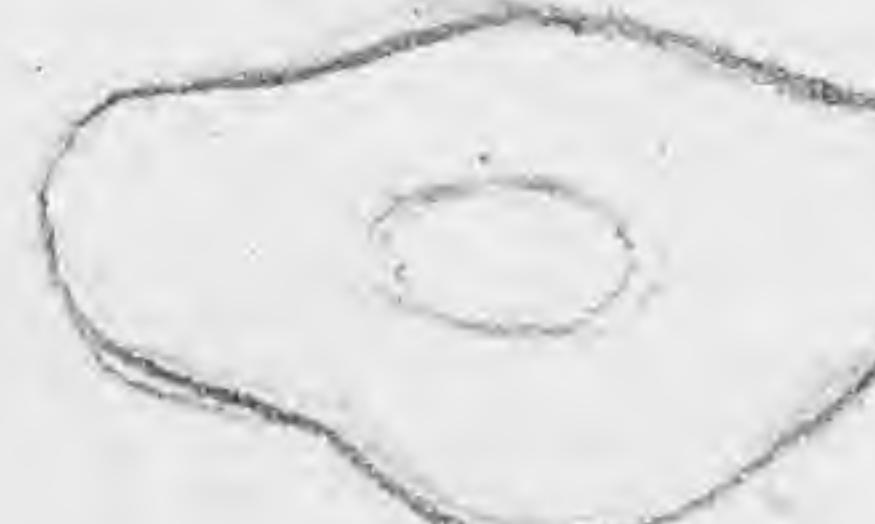
x10



at base tip



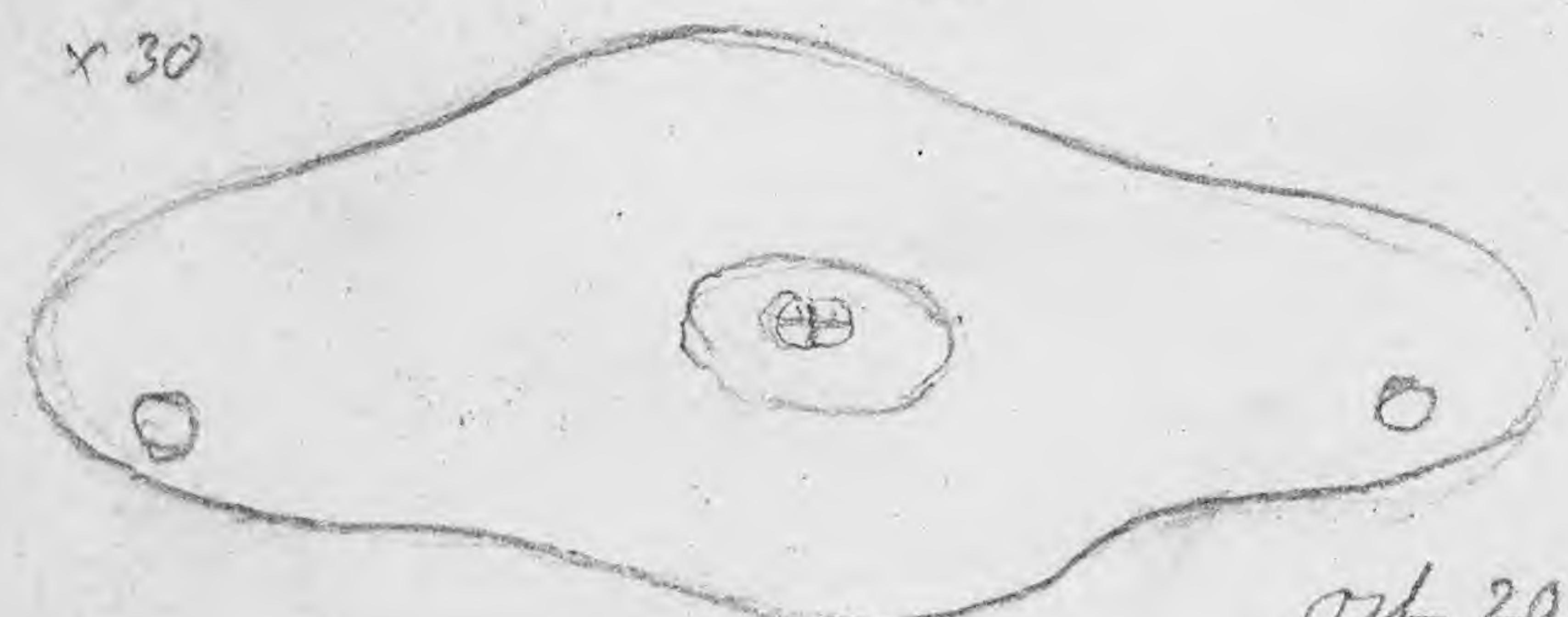
in middle



in lower part



x30



Oct 20 1875



0 1 2 3 4 5 6 7 8 9 10

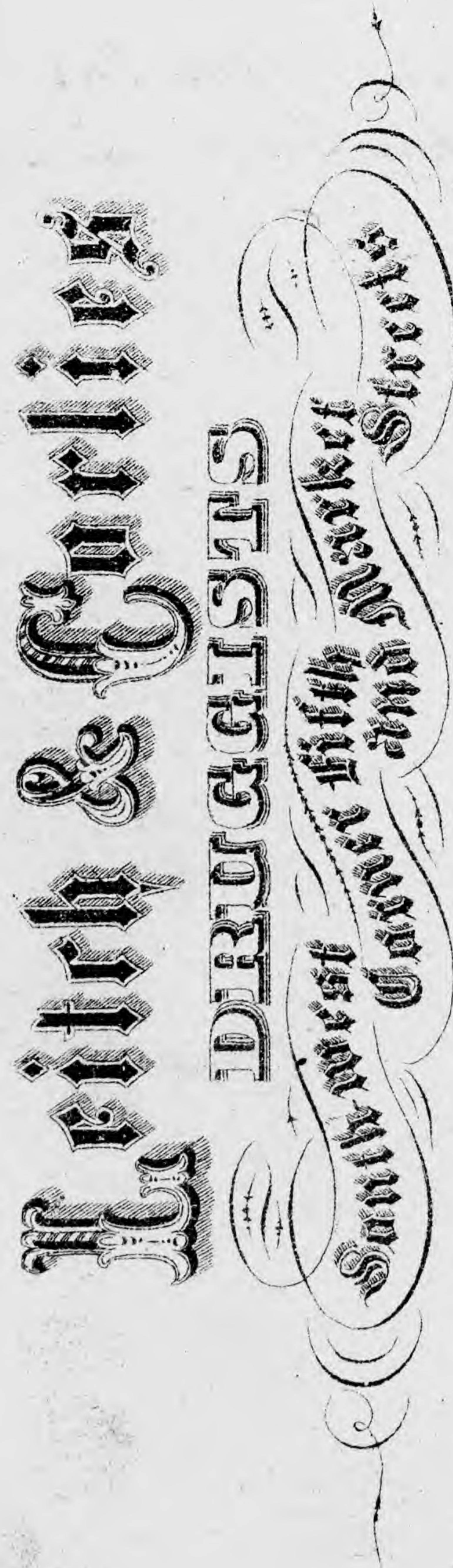
cm

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0 1 2 3 4 5 6 7 8 9 10

cm

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*Aliis magnifica*

Nov 2 1874

Cone no. 2 from H. S. Colander Nov 1874

under the name of *sp. amabilis*

Cone 6 inches long 3 in diameter



10 Cotyled.

Nov 25 74



0

1

2

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10

cm

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GARDEN

HENRY EHREHARDT,  
PHARMACEUTICAL CHEMIST,

No. 301 South Fifth Street, Cor. Myrtle, ST. LOUIS.

187

Date

No.

*Phr*

MISSOURI BOTANICAL GARDEN  
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12655



0  
cm

1

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*abies magnifica*

July 3<sup>2</sup> 1874

Big Trees, Calif - Bolander

2003 PROCTER & GAMBLE

U.S. NATIONAL HERBARIUM

U.S. NATIONAL HERBARIUM

involucr stiff  
with resin in



Pollen



front



upper side



lower side



lateral

anther x 10

6a  
6b  
6c  
6d  
6e  
6f  
6g  
6h  
6i  
6j  
6k  
6l  
6m  
6n  
6o  
6p  
6q  
6r  
6s  
6t  
6u  
6v  
6w  
6x  
6y  
6z

Pollen (34)  $\frac{28-31}{280} = (0.12) 0.14-0.15$  mm long



0 1 2 3 4 5 6 7 8 9 10

cm

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3003 LOCUST STREET.

G. H. ENGLEMAN, M.D.,

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508 Leffingwell Avenue,

ప్రాణికాలాలు



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cm copyright reserved

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*A. magnifica*

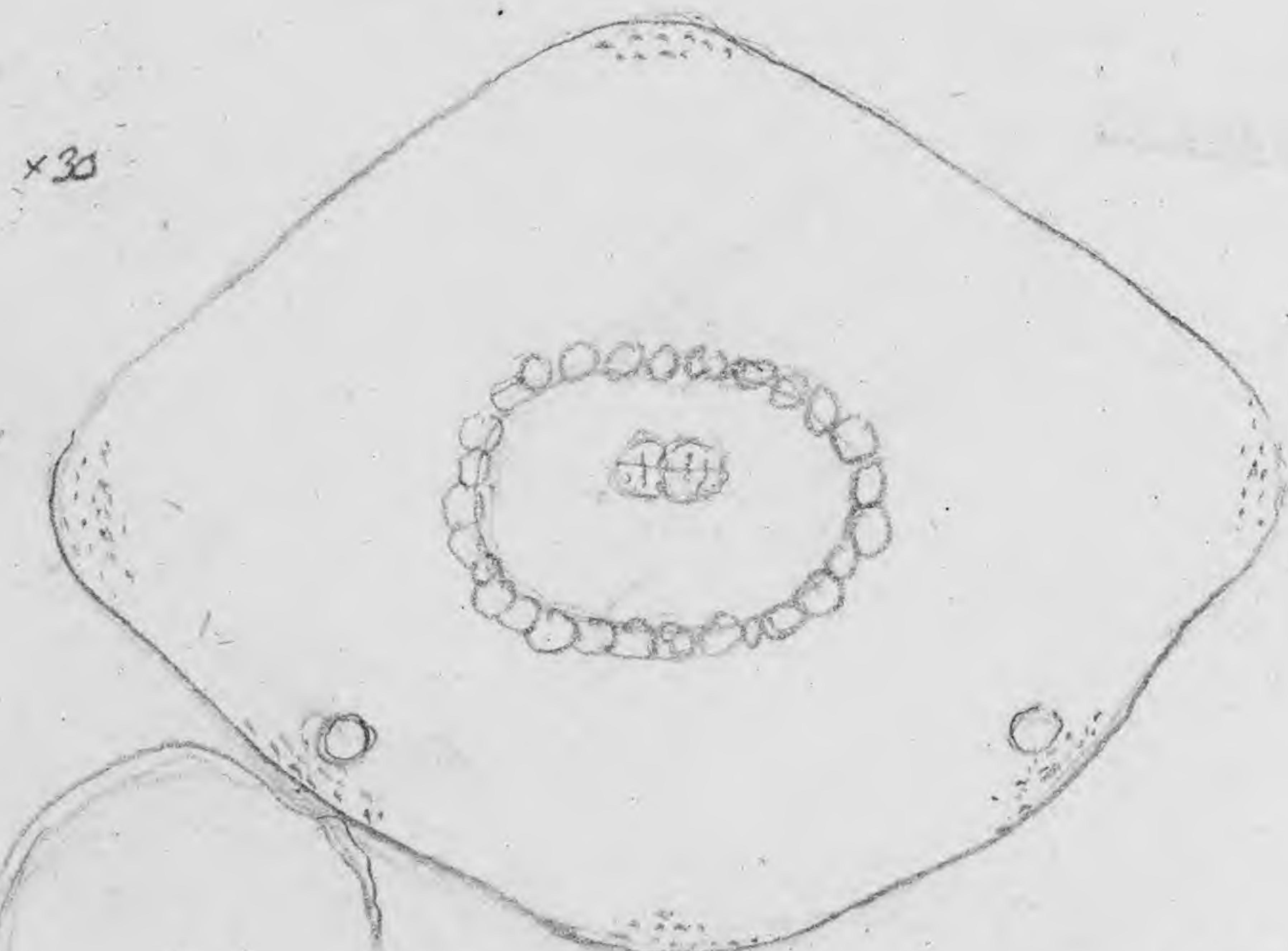
Sierra Nevada

Oct 6 21 1875

stomata all over

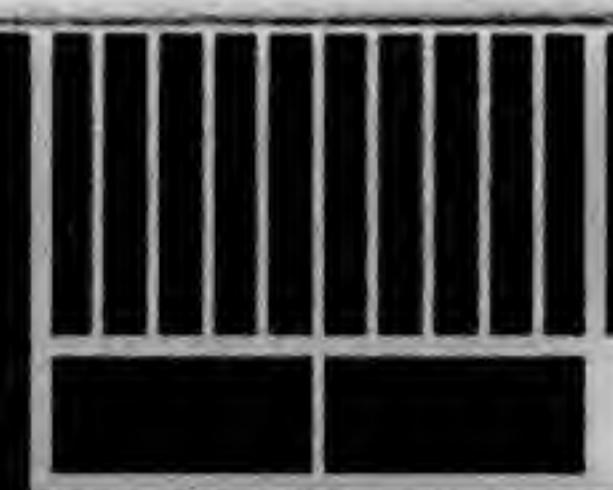
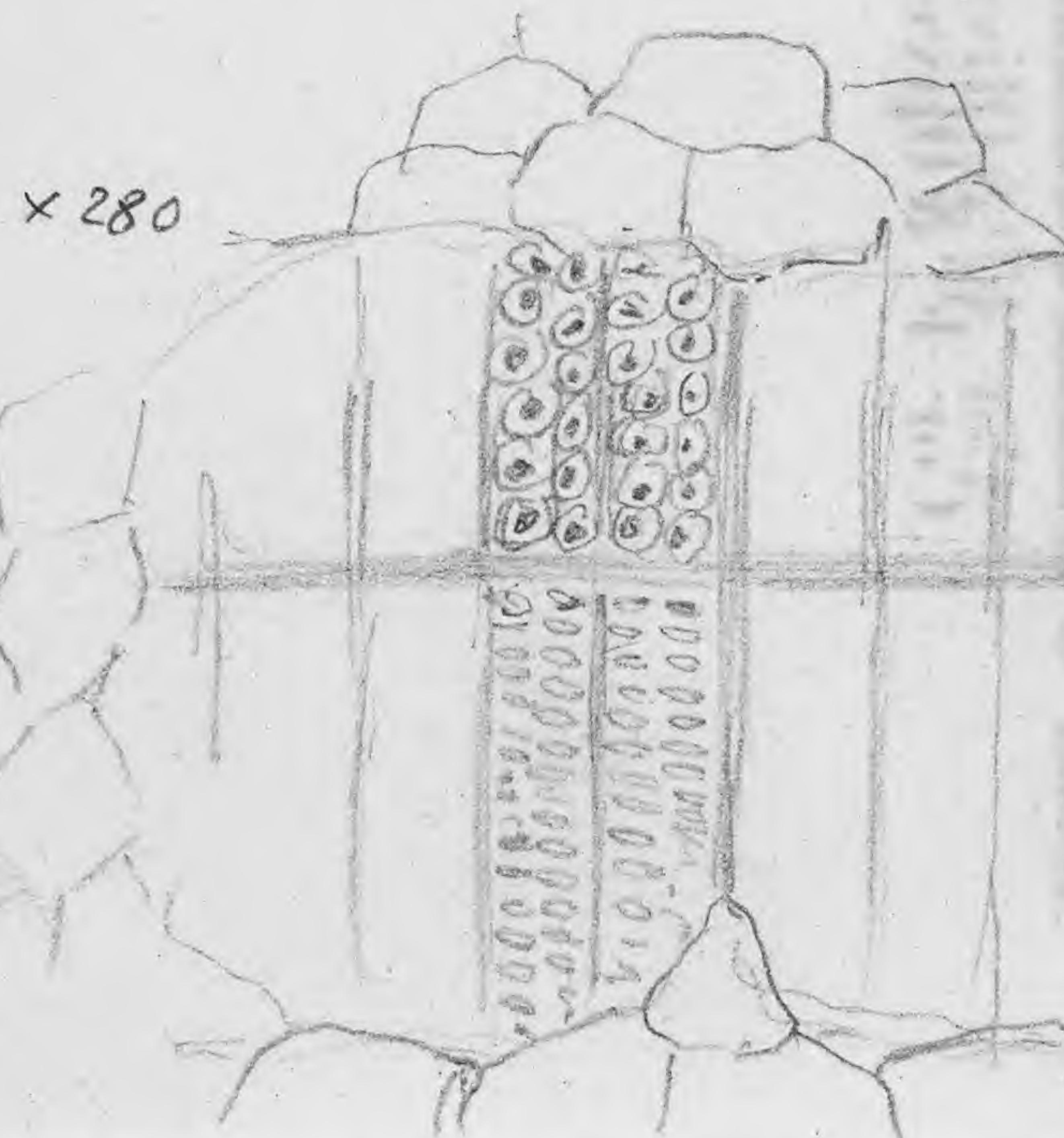
J. G. Lemmon 1874

$\times 35$



top do

$\times 280$



0 1 2 3 4 5 6 7 8 9 10

cm

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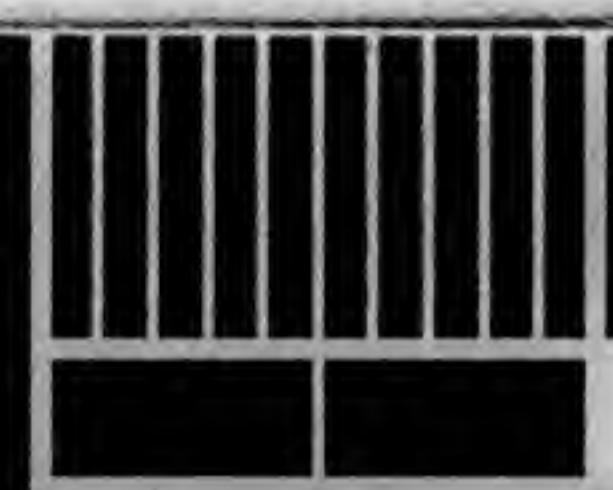
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Cor. 4<sup>th</sup> & Olive Sts., St. Louis.

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0 1 2 3 4 5 6 7 8 9 10

cm

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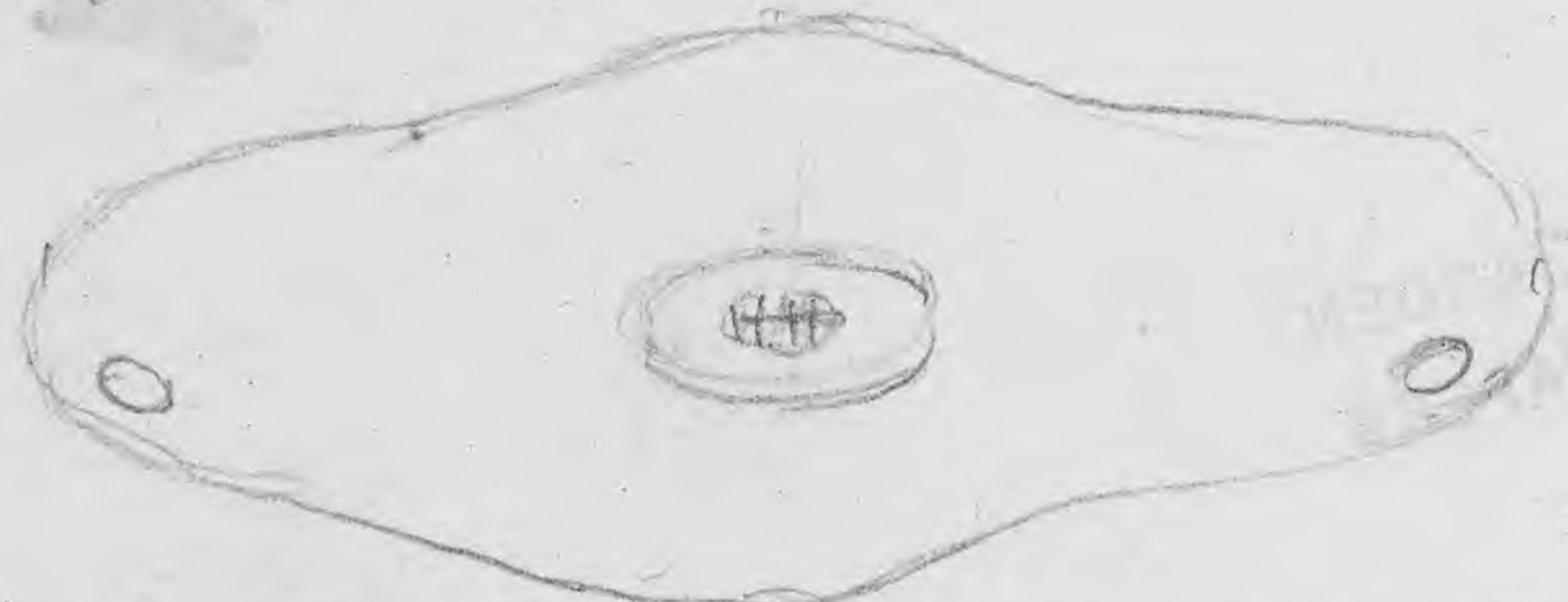
"Abies magnifica"

Febr 19 1876

Wm. Edubay Aug 30 1869

young tree 3-4 feet high

$\times 30$



5-7 lines of stomata in each band below  
12-14 lines on upper side



on upper side 10-12 lines of  
stomata

on lower side 2 bands of  
4-5 lines each

5-7  
width



0 1 2 3 4 5 6 7 8 9 10

cm

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0 1 2 3 4 5 6 7 8 9 10

cm

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a)

A magnified  
leaves of a young tree  
Sierra Valley, Cal  
Lammon

Feb 19 1876

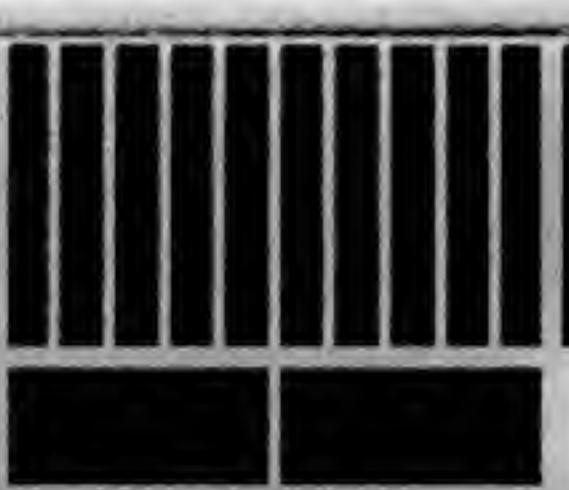
× 30

hypodermis only  
on 4 edges

× 150

12-15 series of  
stomata above  
2 bands of 5-6 below

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0 1 2 3 4 5 6 7 8 9 10  
cm



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0 1 2 3 4 5 6 7 8 9 10

cm

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D.

*A. magnifica*

Feb 19 1876

Sierra Valley, Cal. Common 1875

one with long anthers  
with short leaves

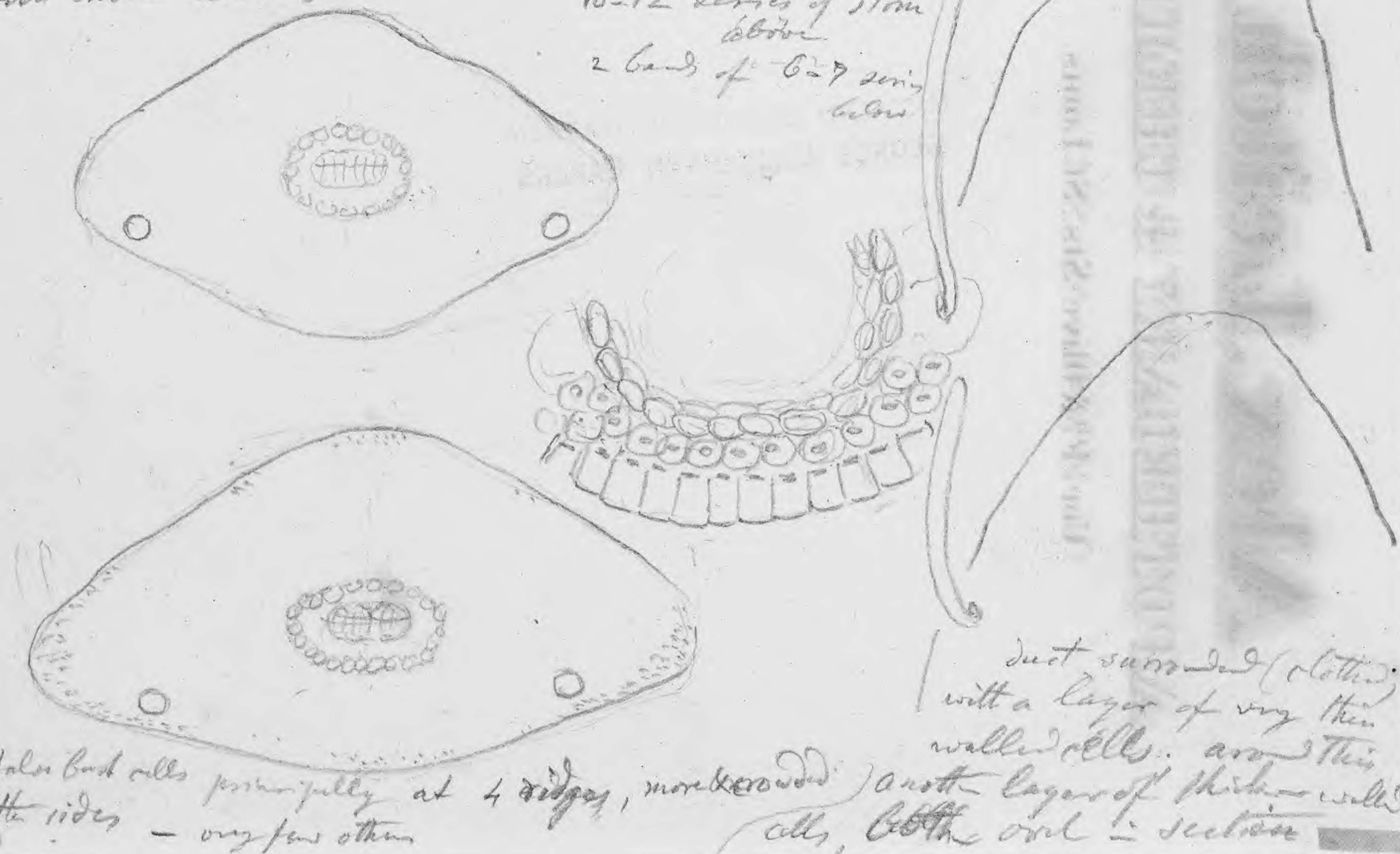
sterile branches of old tree

10-12 series of stom

above

2 bands of 6-7 series

below



0 1 2 3 4 5 6 7 8 9 10

cm

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0 1 2 3 4 5 6 7 8 9 10

cm

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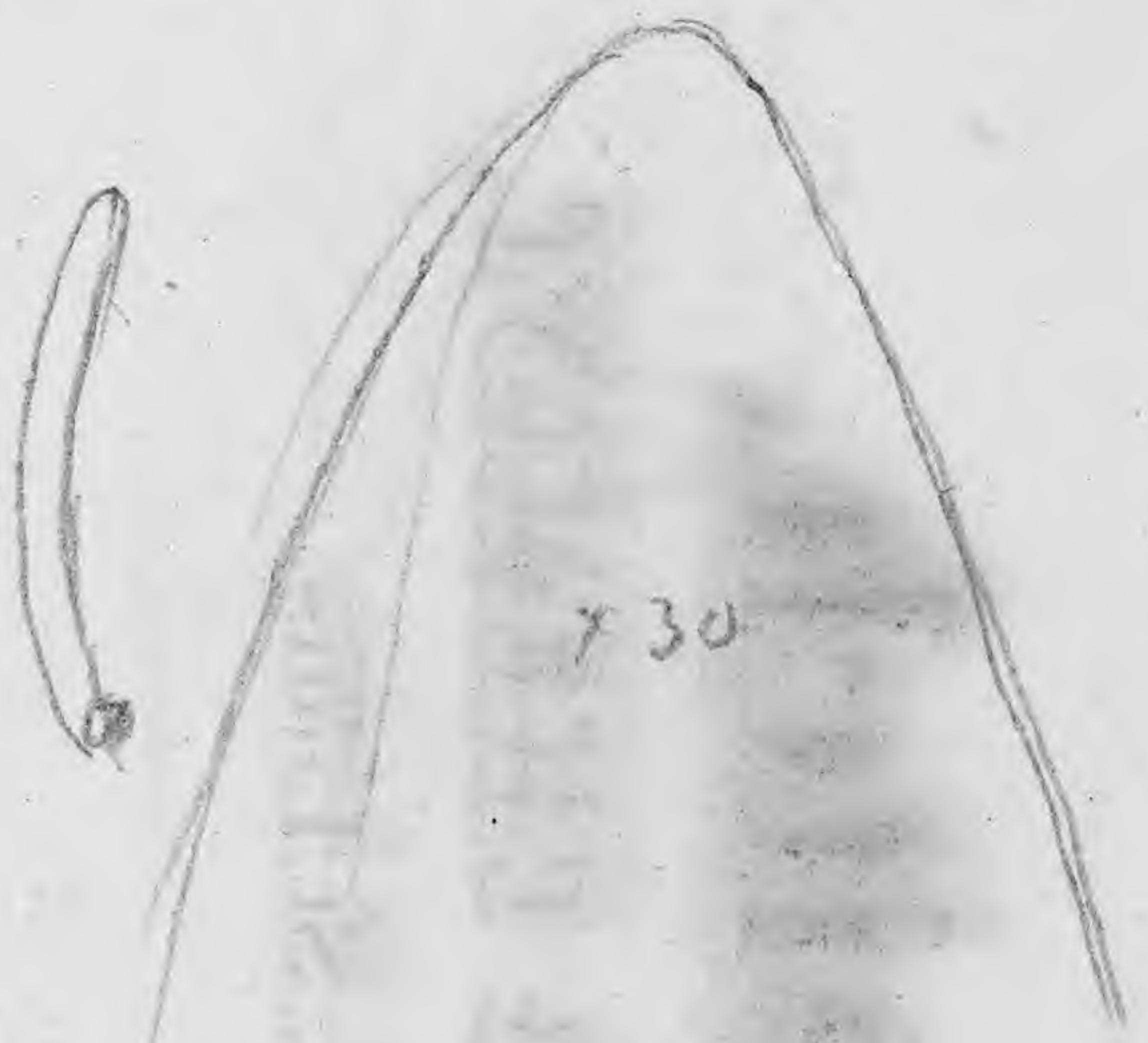
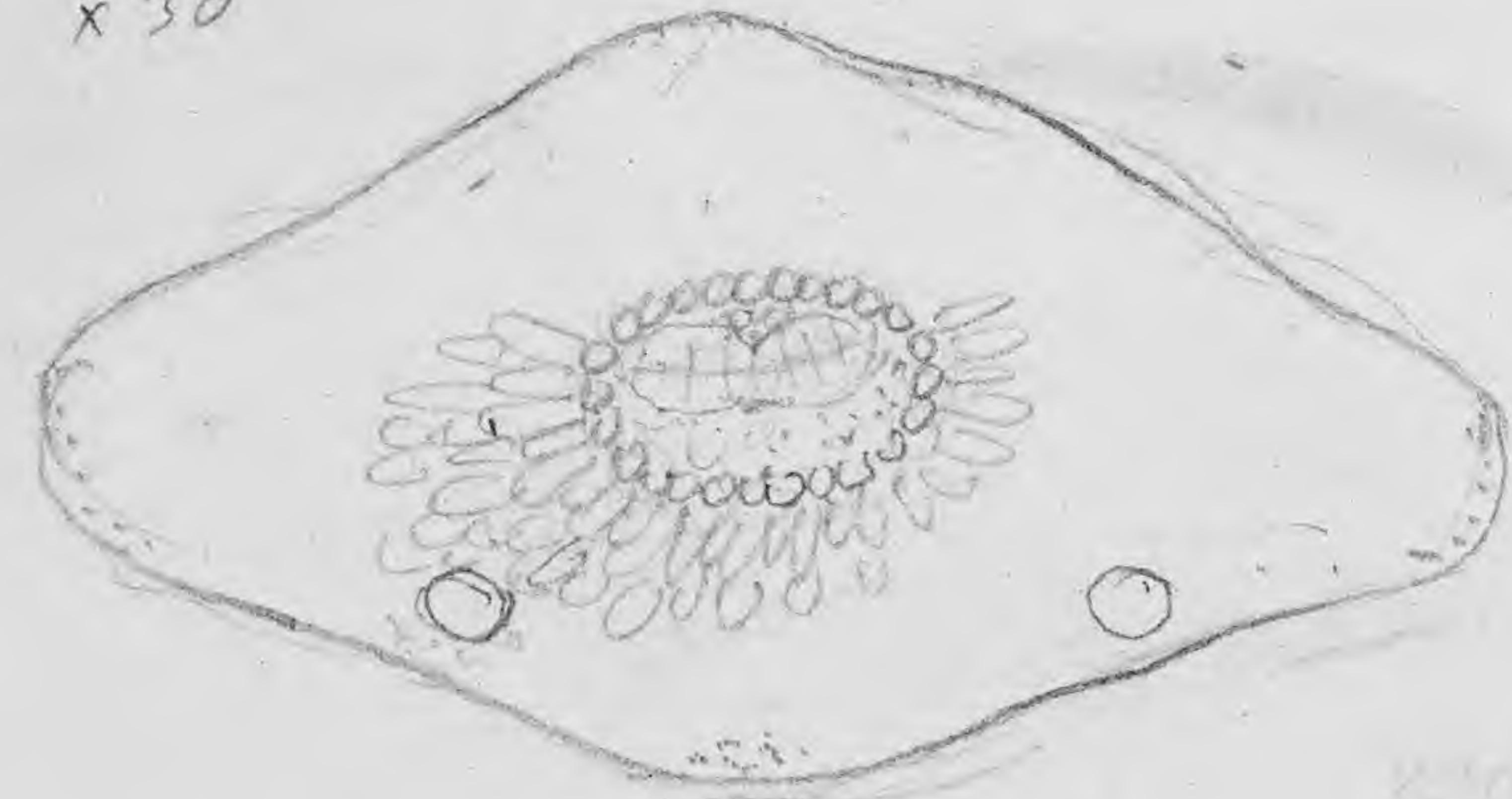
C

*A. megaphysa*  
leaf of a vigorous shoot

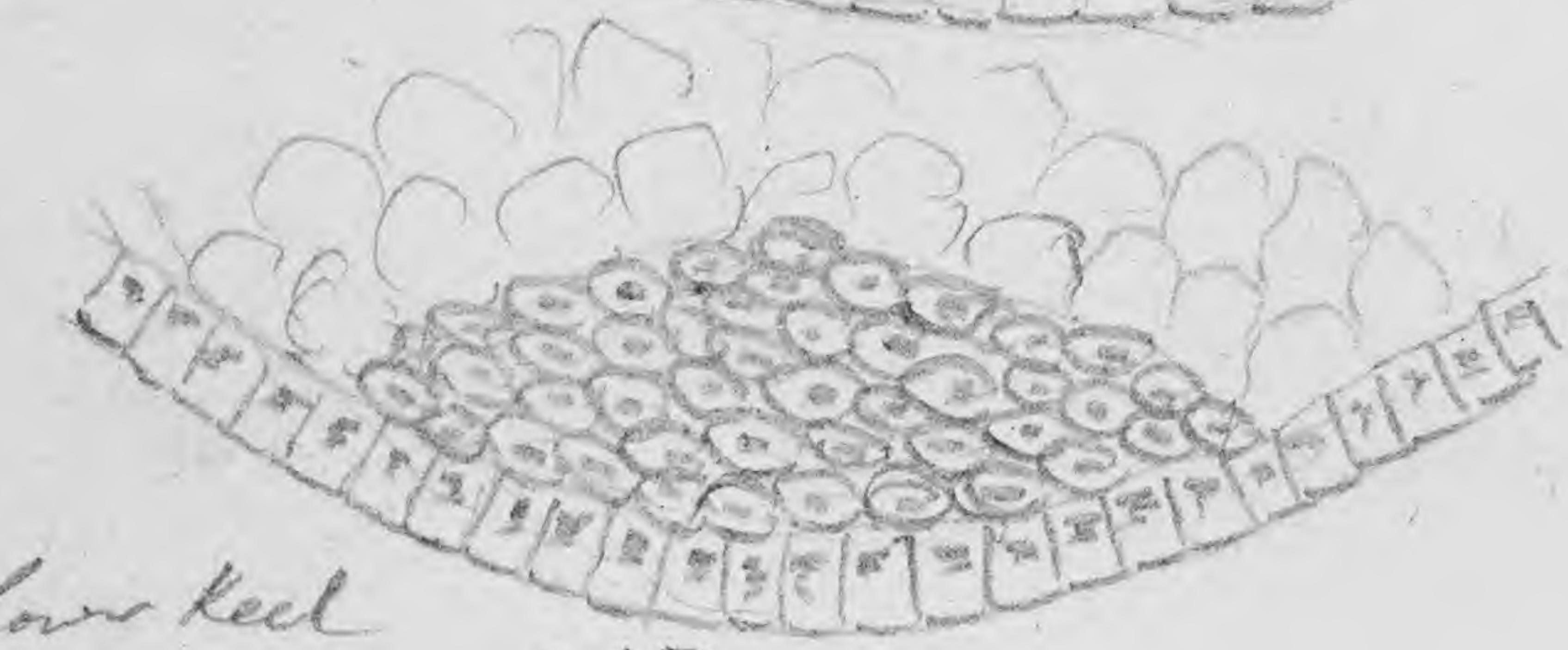
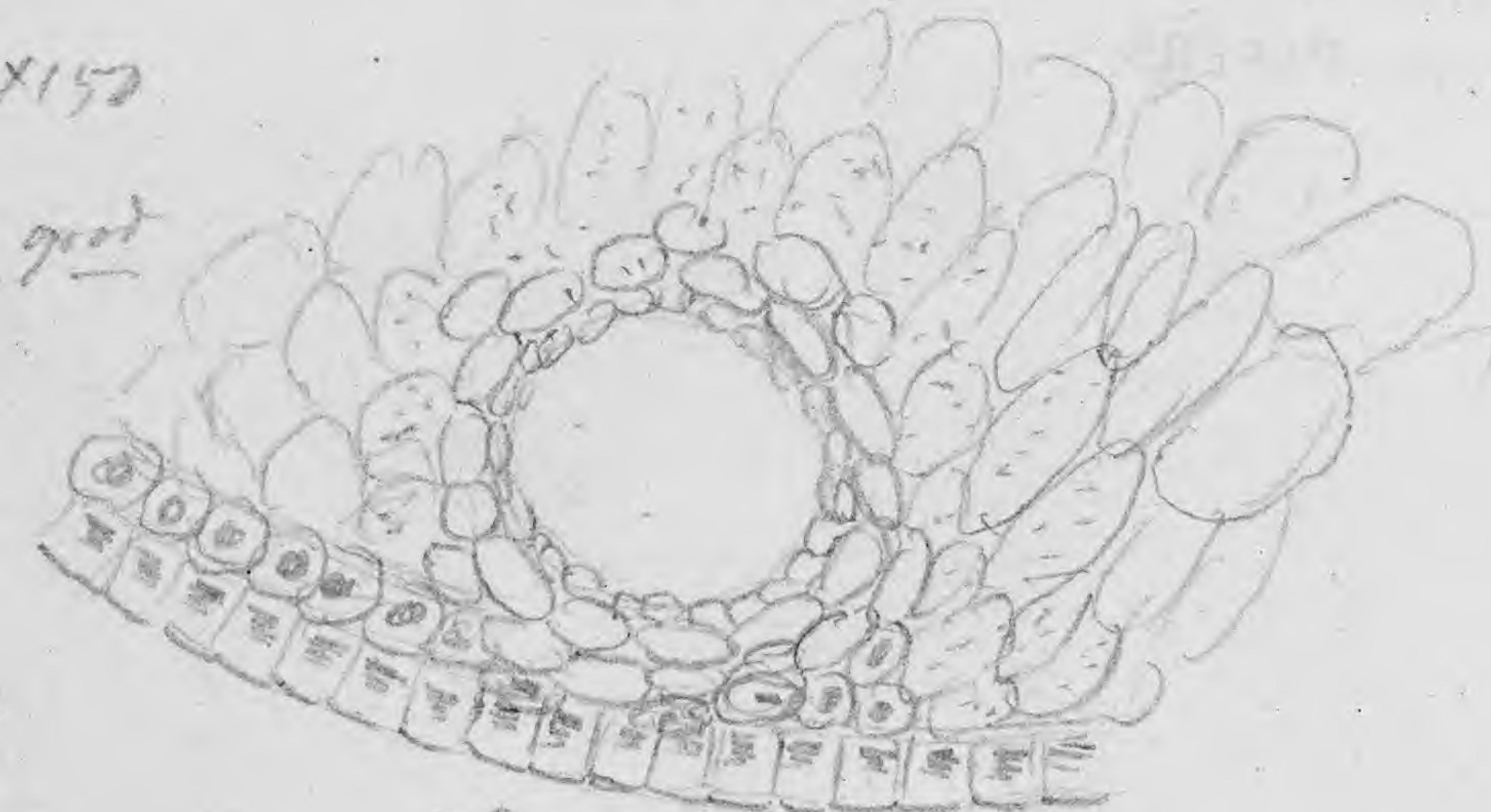
Febr 20 1876

Leavenworth 1875

$\times 30$



$\times 150$

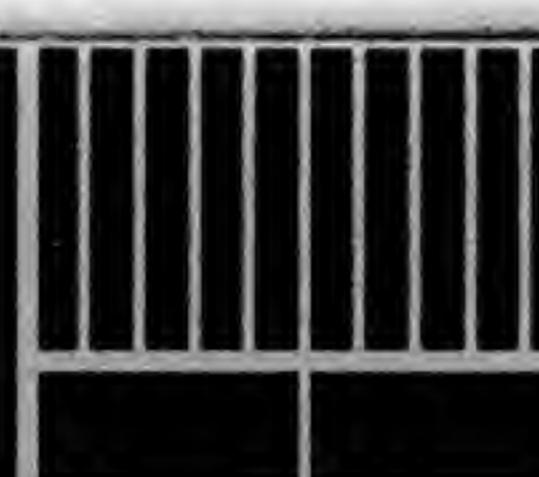


lower keel

$\times 150$

Hypoderm cells on all corners,  
not below

about 12 lines of stomata  
above  
4-5 in each band below



0 1 2 3 4 5 6 7 8 9 10

cm

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0 1 2 3 4 5 6 7 8 9 10

cm

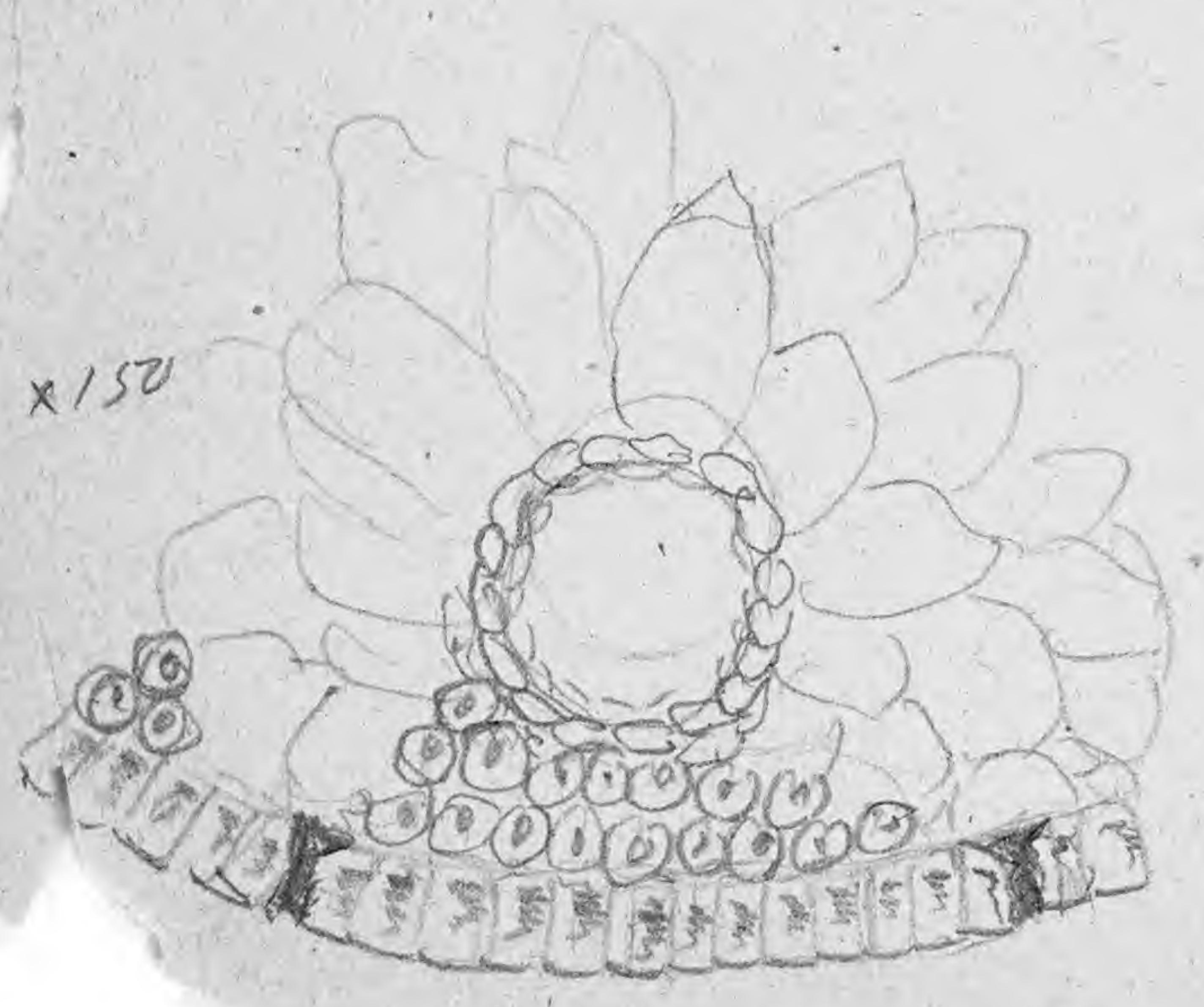
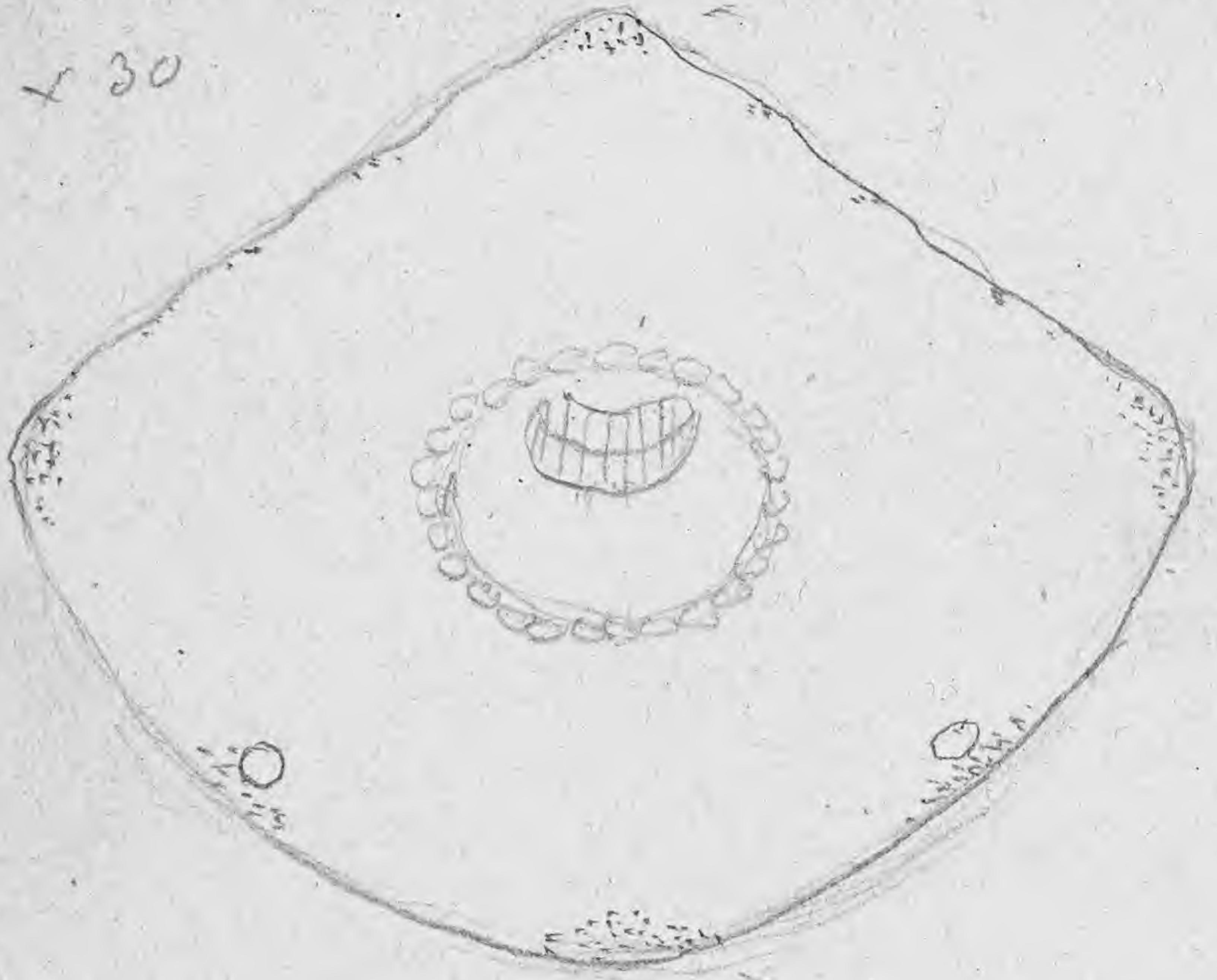
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e *Abies magnifica*  
leaves from sterile branch  
December 1875

Febr 20 1876



12-14 lines of stomata above  
3-4 lines in 4 bands below.

bands separated by epidermis (green)  
underlaid and strengthened by hypho-  
dermic layers

on the 4 angles, heavy layer of hyphae,  
less thick, 2-4 and even 5 cells thick -  
less so under the ducts,  
also some clusters on the upper surface  
fewer on the lower.

leaves of male branch yet shorter  similar  
All the other, upper leaves with similar  
4 bands of stomata below



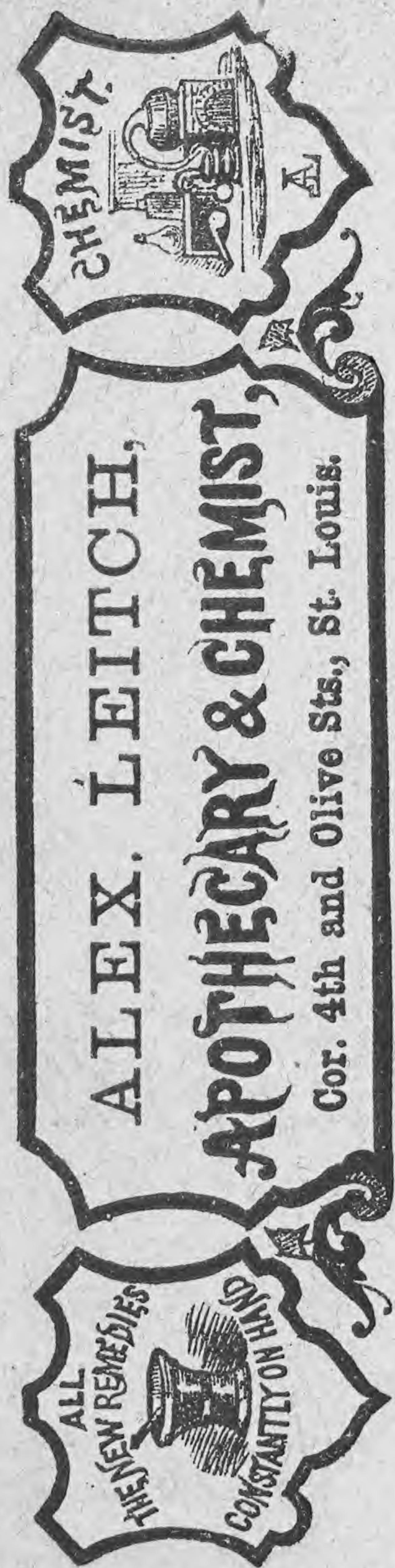
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cm

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*Abies magnifica*

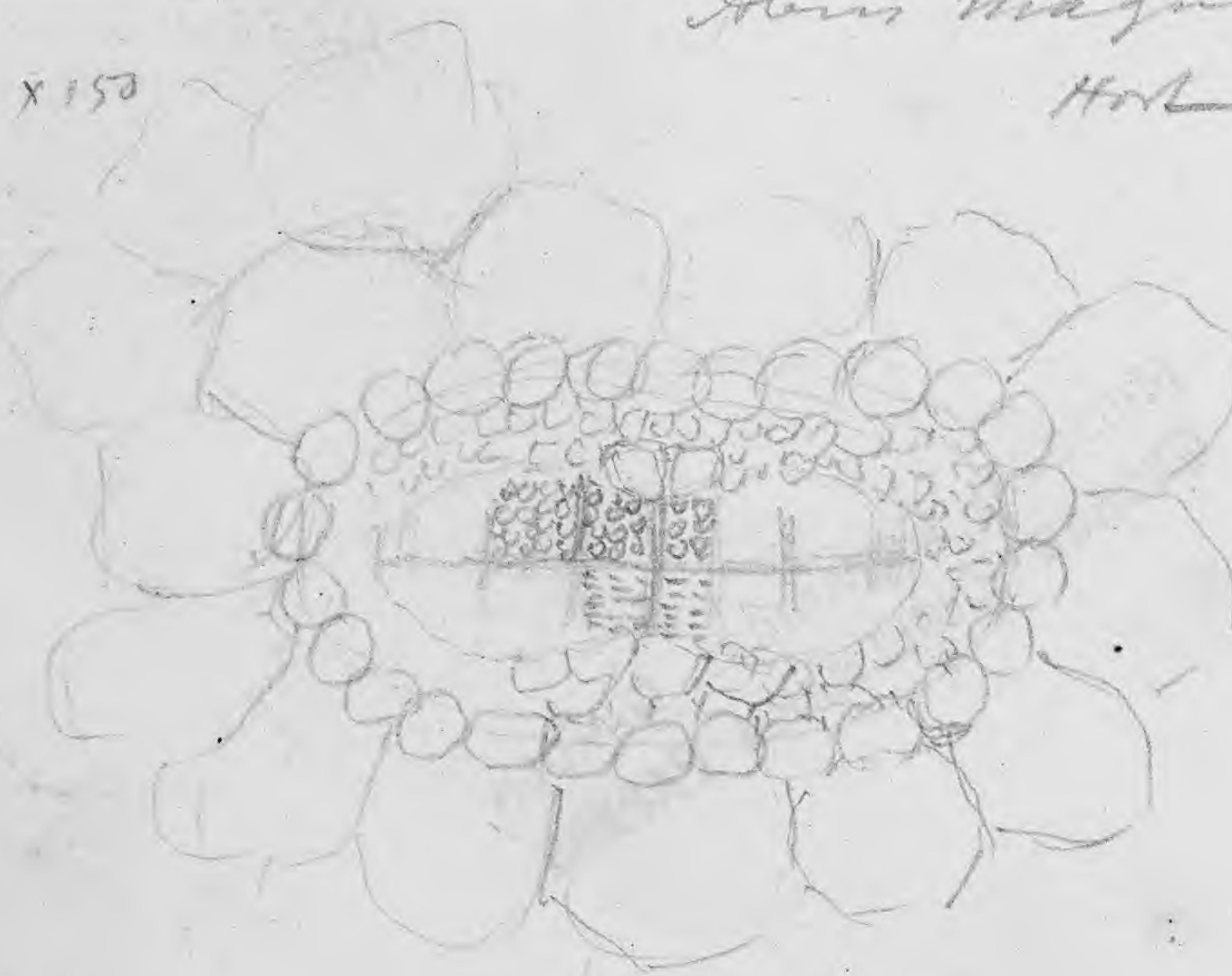
Febr 20 1876

6 x 150

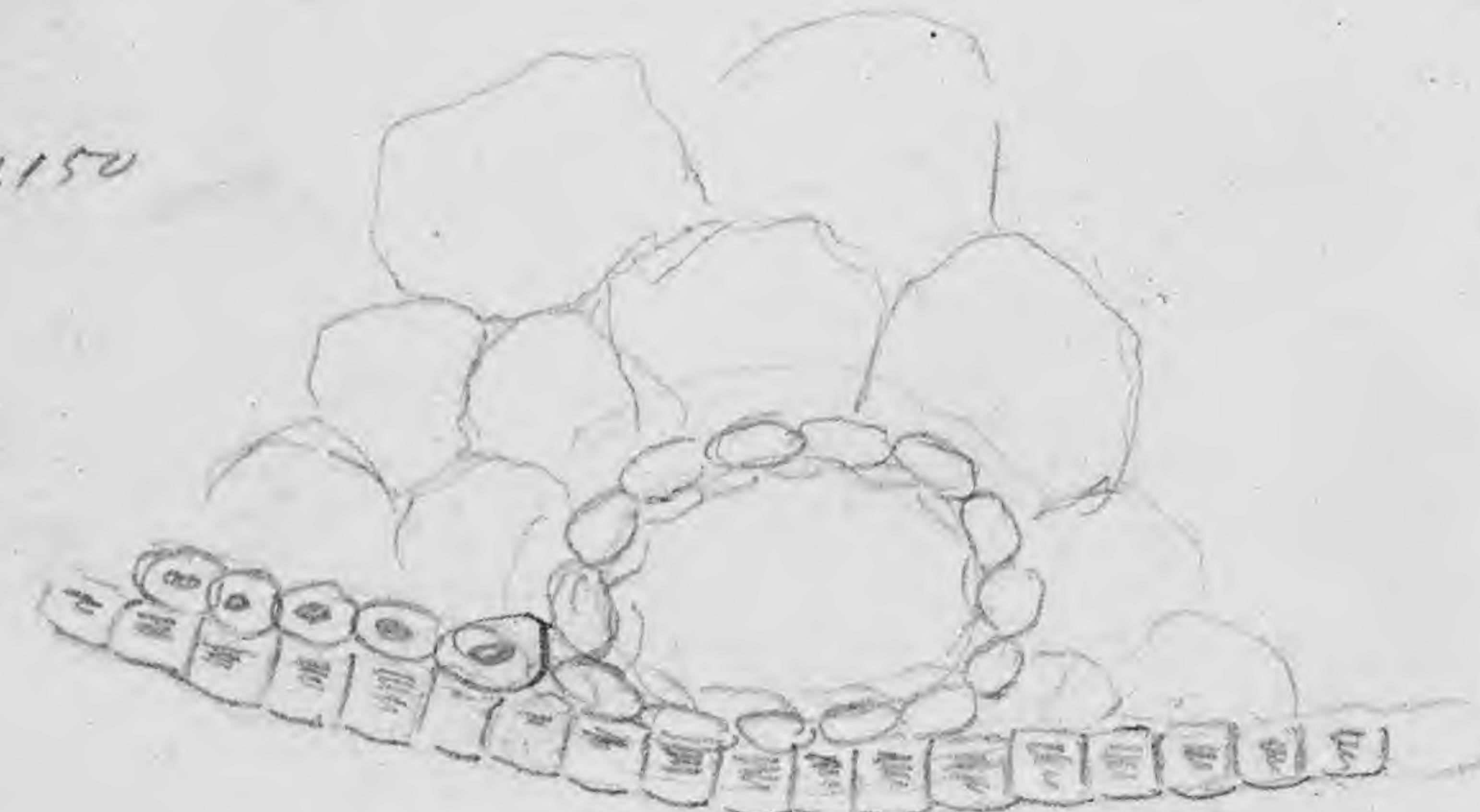
Hort Edinburgh Aug 20 1869

young tree

hypodermis on all 4 carinae



x150



Collection 216-26 Frans



0 1 2 3 4 5 6 7 8 9 10

cm

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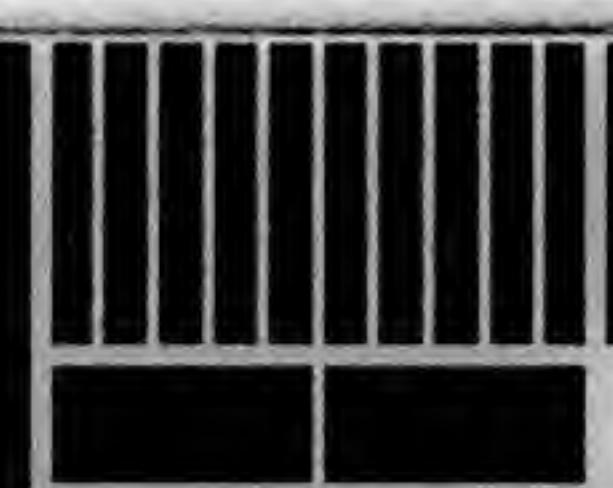
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0 1 2 3 4 5 6 7 8 9 10

cm

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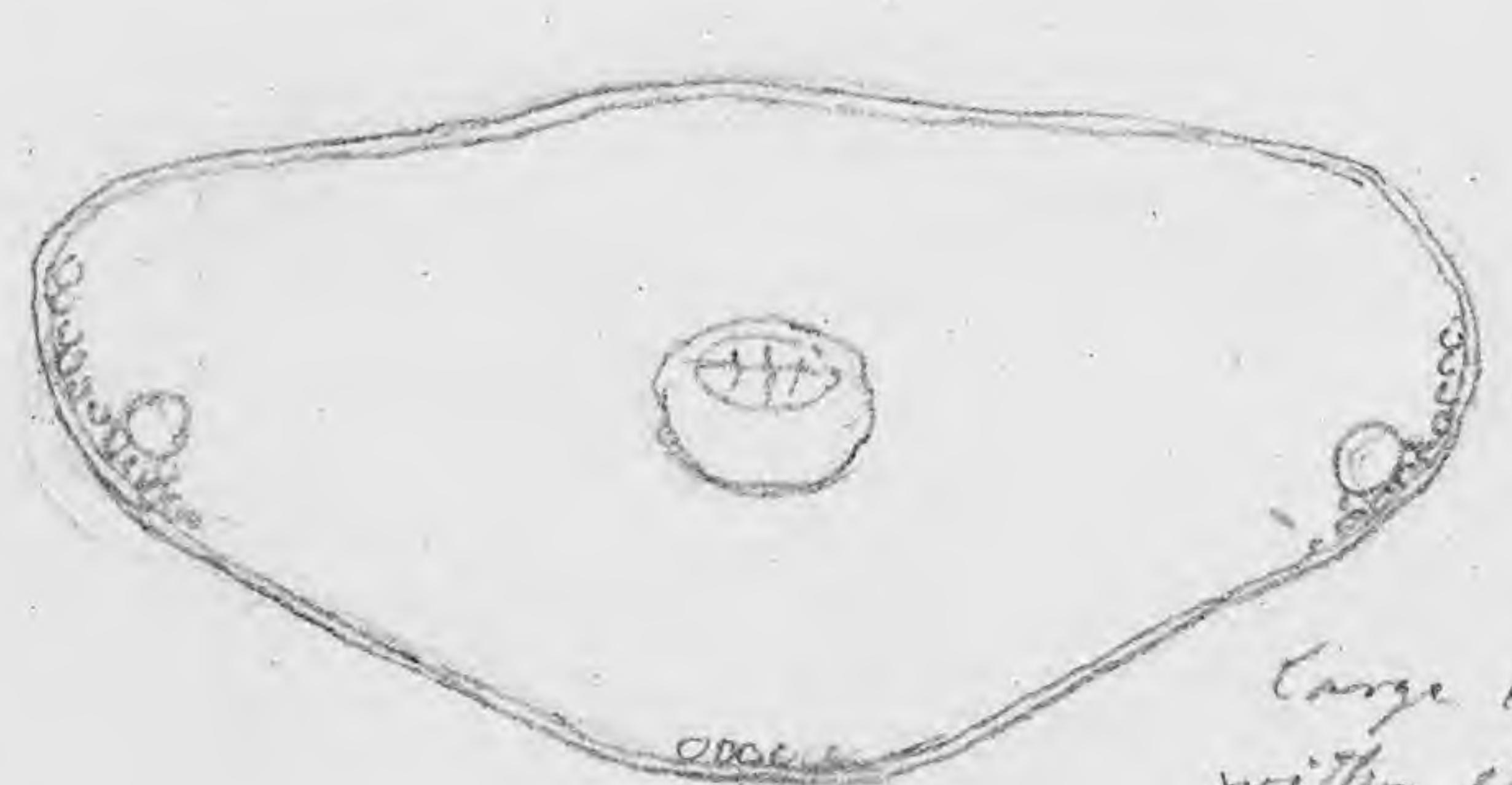


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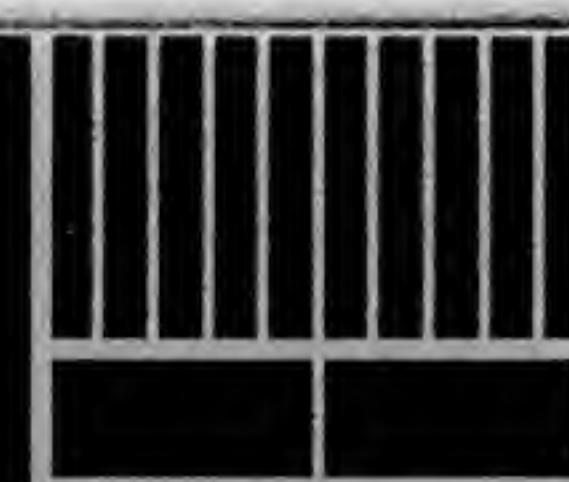
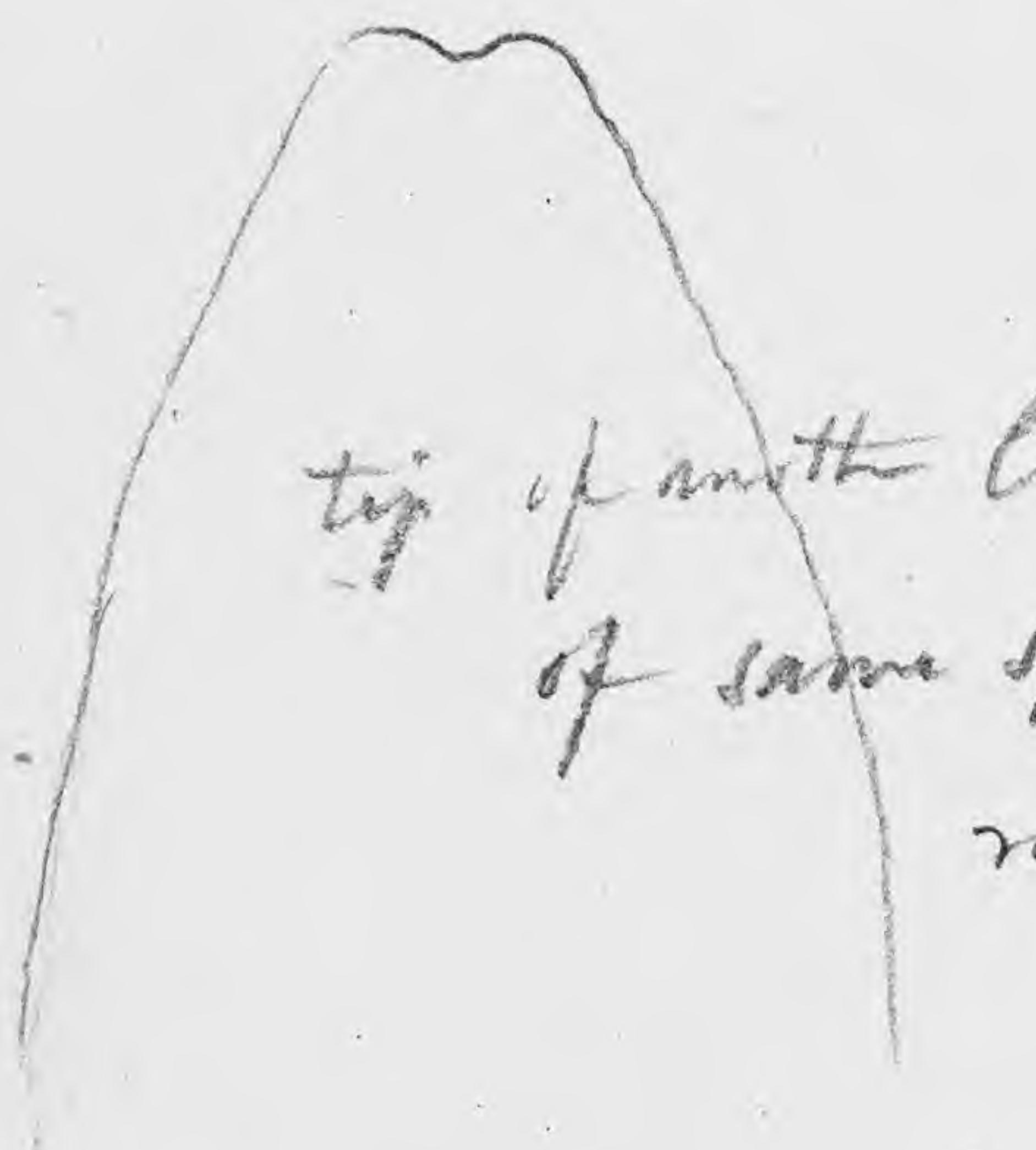
*Abies magnifica*

April 1<sup>st</sup> 1881

6 inches high, probably 5 years old  
Sierra, Oct 1880



$\times 30$



0 1 2 3 4 5 6 7 8 9 10

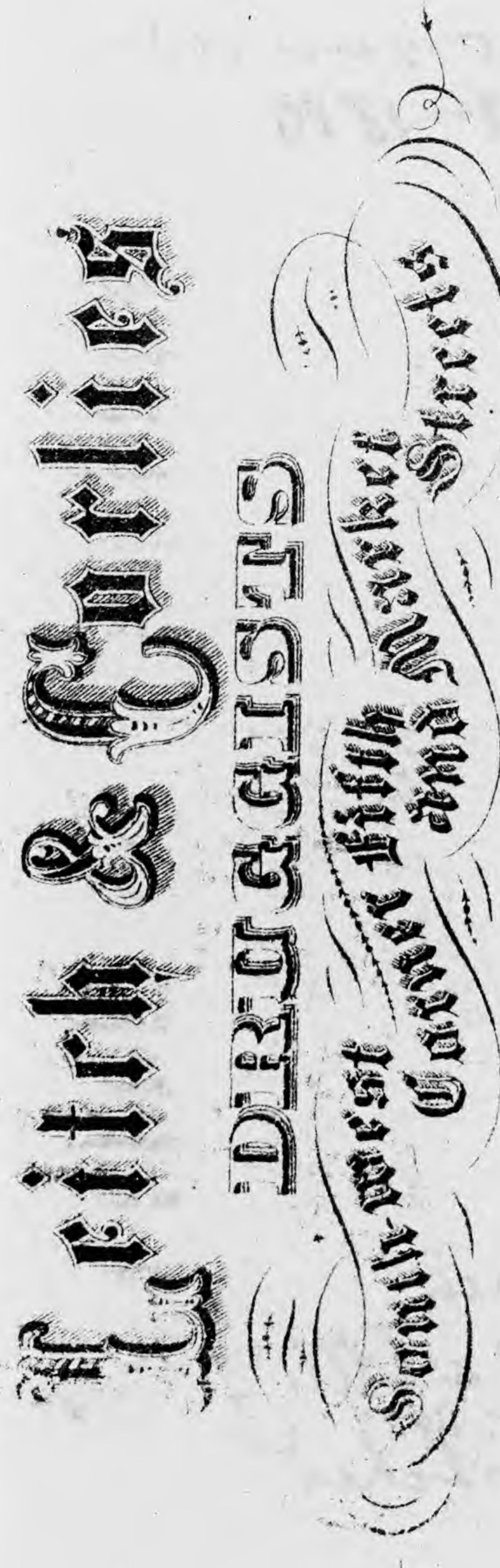
cm

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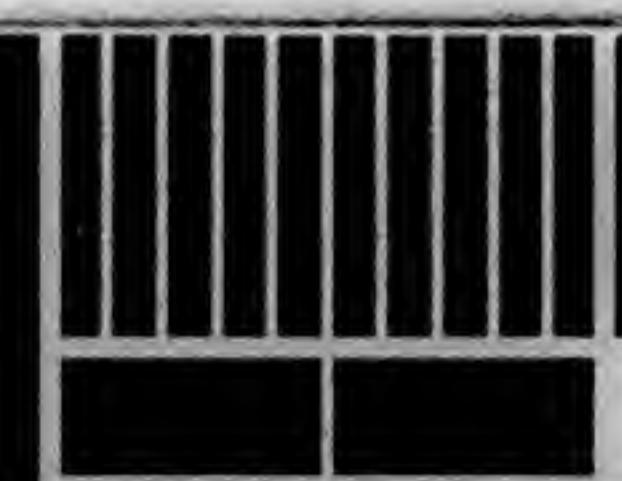


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